

# Why Sight Is Not Touch

## *Reconsidering the Tactility of Vision in Byzantium*

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*This embracing or kissing the image visually, I submit, was meant literally as well as metaphorically. Like all successful religious symbolism, this metaphor was grounded in perception and perceptual theory. Because the optical rays that issue forth from the eyes were thought to touch the object seen, vision was haptic, as well as optic, tactile as well as visual. Vision thus connected one with the object seen, and, according to extramission, that action was initiated by the viewer.*

—Robert S. Nelson<sup>1</sup>

In 2000, Robert S. Nelson's groundbreaking essay "To Say and to See: Ekphrasis and Vision in Byzantium" raised the theory of haptic extramission to a privileged position in the history of Byzantine art and culture. While acknowledging Byzantium's possession of competing antique and post-antique theories of vision, Nelson's careful analysis of the literature suggested that the Byzantine viewer understood sight as having the ability to physically touch the icon as if kissing and embracing its surface. He argued that the Byzantines

preferred a theory of sight whereby the eyes emitted rays that grazed the body of the object and returned to the viewer for the enabling of perception, thus making vision a species of touch and the engagement with visual culture an active rather than passive activity. Weaving metaphor, science, and philosophy, this theory of visual perception projected itself as all-encompassing, whereby viewer and object were not distinct species but linked as one through the tactility of sight.

Byzantium, however, was a diverse place with competing theories of vision that, while demonstrating a great deal of coherence and unity, varied in nuanced and crucial manners. Nelson claimed tactility to be the defining aspect of extramission, but, as this article seeks to demonstrate by looking closely at classical, late antique, and Byzantine sources, one thing that all the theories of vision throughout the Byzantine period did agree upon (whether extramissive, intromissive, or a variant), however, was that touch proper did not occur through sight. This article is not an argument against extramission, but rather a demonstration that extramission was never haptic, that it was never understood to be a by-product or species of touch. Thus, this article rereads Nelson's sources closely, against the grain, and alongside further crucial texts, to demonstrate how Byzantine authors writing on medicine, the natural world, and theology were all uniformly dedicated to nuanced articulations of sight that were explicitly distanced from touch so as to undergird an image theory that did not fetishize the illusion of palpable presence

1 R. S. Nelson, "To Say and to See: Ekphrasis and Vision in Byzantium," in *Visuality Before and Beyond the Renaissance: Seeing as Others Saw*, ed. R. S. Nelson (Cambridge, 2000), 143–68, at 153.

in the icon. The goal of this article is to provide readers with a representative survey of Byzantine writings on vision and its relationship to touch, culled from a variety of sources spanning from the fourth to fourteenth centuries, as well as a careful discussion of the classical and late antique texts on vision that grounded the Byzantine discussion.

## The Interval of Sight

To begin this investigation, I wish to juxtapose Nelson's observations with those made by Michael Psellos in the eleventh century in his commentary on sense perception. Here Psellos provides the student reader with a well-curated composition of excerpts from Alexander of Aphrodisias's popular commentary on Aristotle's *On Sense and Sensible Objects*.<sup>2</sup> After summarizing the theories of Plato, Empedokles, and Demokritos, and explaining Aristotle's theories of sensual perception at large, Psellos summarizes Aristotle's theory of vision, through Alexander, writing:

The Aristotelian teaching on perception is this among other things. For, [Aristotle] says, sight perceives by being affected by the things seen, just as each of the other [senses] perceives, but not by making and sending out, and not by being affected by admitting what flows from the things perceived. Rather, the transparent, which is a medium between sight and the thing seen, when it is this [transparent] in actuality (and it is this in actuality when it has become light), is moved by the things seen, these being the colors (for color moves that which is transparent in actuality). For the transparent in actuality, being moved and arranged by the things seen, transmits its form to the pupil, which is also transparent. And hence vision comes about in this way as the form of the thing seen is received through the transparent medium and transmitted as far as the primary sense by means of the intermediate passage which is to be full of this body. This is not caused by emissions, as

those before him suppose (for on this view sight would also be touch), but because the transparent medium between that which sees and that which is seen is moved by the things seen.<sup>3</sup>

Here, Psellos sketches out how the views of Aristotle differed from the understandings of sight espoused by Plato, Demokritos, and Empedokles. Moving past a dialectic resolution to the opposing views of extramission and intromission, where rays are either shot out from the eyes or passively received, Aristotle resorts to a new theory of vision based not on emissions but on colors of the object moving and shaping an intervening medium. Color, being the proper sensible element of sight, affects this medium between the viewer and object, which ripples through and passes on those sensations to the eye. This medium is termed the transparent or "diaphanous" (τὸ διαφανές), which is activated by light into a transparent conduit, transmitting color by virtue of the transparent's affective movement, not by the transmission of effluxes or through emanations from viewers or things.<sup>4</sup> As a result of this, Aristotle distances sight from touch since tactility cannot transmit color, and also because the transparent medium produces a necessary interval of separation between the object and the viewer as the primary actor in the act of visual perception.

3 Trans. Barber (all unattributed translations in this article are my own). "Δόξα δὲ Ἀριστοτέλους περὶ τῆς αἰσθήσεως παρὰ τὰς τῶν ἄλλων αὐτῇ ἐστὶ: πάσχουσα γάρ, φησὶν, ἢ ὄψις ὑπὸ τῶν ὁρατῶν αἰσθάνεται, ὥσπερ καὶ ἐκάστη τῶν ἄλλων αἰσθήσεων, ἀλλ' οὐχὶ ποιοῦσα καὶ ἐκπέμπουσα, πάσχουσα δὲ οὐ τῷ δέχεσθαι ἀπορρέοντά τινα ἀπὸ τῶν αἰσθητῶν, ἀλλὰ τῷ μεταξὺ τῆς τε ὄψεως καὶ τοῦ ὁρωμένου διαφανές, ὅταν κατ' ἐνέργειαν ἢ τοιοῦτον (τοιοῦτον δὲ ἐστὶ τὸ πεφωτισμένον), κινεῖσθαι ὑπὸ τῶν ὁρατῶν, τουτέστι τῶν χρωμάτων (κινητικὸν γὰρ τὸ χρῶμα τοῦ κατ' ἐνέργειαν διαφανοῦς). κινούμενον γὰρ καὶ διατιθέμενον τὸ κατ' ἐνέργειαν διαφανές ὑπὸ τῶν ὁρατῶν τὸ εἶδος αὐτοῦ διαδίδωσι τῇ κόρῃ, οὕση καὶ αὐτῇ διαφανεῖ. καὶ οὕτως διὰ ταύτης δεχομένης διὰ τοῦ διαφανοῦς τὸ μεταξὺ εἶδος τοῦ ὁρωμένου καὶ μέχρι τοῦ πρώτου αἰσθητικοῦ διαδιδούσης αὐτὸ τῷ τὸν μεταξὺ πόρον τοιοῦτου σώματος εἶναι πλήρη τὸ ὁρᾶν γίνεσθαι: οὐ γὰρ ταῖς ἀπορροαῖς, [ὡς ᾤοντο οἱ] πρὸ αὐτοῦ (ἀφ' ἧς οὕτω καὶ ἡ ὄψις ἔσται), ἀλλὰ τῇ τοῦ μεταξὺ τῆς ὄψεως καὶ {τῆς} τοῦ ὁρωμένου διαφανοῦς κινήσει ὑπὸ τῶν ὁρατῶν." Michael Psellos, *Περὶ αἰσθήσεως καὶ αἰσθητῶν* (Opuscula 8, ed. D. J. O'Meara). *Philosophica Minora*, vol. 2 (Leipzig, 1989), 16–17, trans. C. Barber, *Contesting the Logic of Painting* (Leiden, 2007), 94.

4 On the theory of the transparent, see A. Vasiliu, *Du diaphane: Image, milieu, lumière dans la pensée antique et médiévale* (Paris, 1997).

2 Alexander of Aphrodisias, *In librum De sensu commentarium*, ed. P. Wendland, *Commentaria in Aristotelem Graeca* 3.1 (Berlin, 1901), 1–173, trans. A. Towey in Alexander of Aphrodisias, *On Aristotle's On Sense Perception* (London, 2000), 17–156.

If this passage is considered as anything more than just a curiosity in the work of a uniquely and idiosyncratically educated figure, then it challenges quite concisely the historiographically dominant theory of extramission and its haptic iterant in the work of art historians.<sup>5</sup> Thus, it is necessary to consider to what extent Psellos's deployment of this popular commentary could be generalized in any sense for a broader cultural space. Notably, this challenge to the norm comes not as much from the text's advocacy for a form of intromission, but rather from its insistence on sight as a form of perception mediated by a third party between object and viewer, in this case the transparent (τὸ διαφανές). For Charles Barber, this passage is pivotally important for understanding Psellos's theory of images since Psellos uses Aristotle to focus attention on the physical space between the viewer and the icon: in Barber's own words, the "medium that both separates and links the one seeing and the things seen."<sup>6</sup> Thus, the literal medium of the Byzantine image in this model is the intervallic space between the perception of the viewer and the image in the icon, denying the instant gratification that haptic sight allows.

In his treatise on the senses, along with *De anima*, Aristotle reiterates several times that Empedokles, Demokritos, and Plato were in error in believing in variations of both extramission and intromission, precisely because their views evidenced an absence or muddling of a medium for the senses. Aristotle writes:

For vision occurs when the sensitive faculty is acted upon; as it cannot be acted upon by the actual colour which is seen, there only remains the medium to act on it, so that some medium must exist; in fact, if the intervening space were void, not merely would accurate vision be impossible, but nothing would be seen at all.<sup>7</sup>

5 See S. Biernoff, *Sight and Embodiment in the Middle Ages* (New York, 2002); G. Frank, *The Memory of the Eyes: Pilgrims to Living Saints in Christian Late Antiquity* (Berkeley, 2000); J. Jung, "The Tactile and the Visionary: Notes on the Place of Sculpture in the Medieval Religious Imagination," *Looking Beyond: Visions, Dreams, and Insights in Medieval Art and History*, ed. C. Hourihane (Princeton, 2010), 203–40; H. L. Kessler, "Seeing," *Seeing Medieval Art* (Toronto, 2004), 165–179.

6 Barber, *Contesting the Logic*, 95.

7 "πάσχοντος γάρ τι τοῦ αἰσθητικοῦ γίνεται τὸ δρᾶν: ὑπ' αὐτοῦ μὲν οὖν τοῦ ὁρωμένου χρώματος ἀδύνατον: λείπεται δὲ ὑπὸ τοῦ μεταξὺ,

As Aristotle had already clarified in the same passage, if one were to press a colored object to one's eye, one would be wholly unable to see it, given that an interval of difference is necessary between the object and the organ of sight. Hence, sight is not a species of touch. The same applies to sound and smell, which are both perceived through a medium. Only touch—and taste, which is a form of touch—does not appear at the outset to require a medium per se because of the immediacy of its perception. However, Aristotle goes on to clarify that even this is misleading since touch is indeed mediated. For Aristotle, the notion of the medium in his writings appears to be rooted in the level of proximal presence offered by the object sensed. Hence, he reasons that even touch occurs through a medium, but not because a medium acts upon us, but rather because we perceive tangible things "at the same time as the medium" (ἅμα τῷ μεταξὺ)—like a soldier who is wounded through his shield, touch occurs because both the sense organ and the sensible thing are stricken *together*, not because one was moved toward the other *through* a medium.<sup>8</sup> Thus, the medium in Aristotle's theory of perception is akin to a broader function of mediation, indicating that that which is termed a medium is synonymous with how it mediates perception. Here, I wish to consider how the manner in which one constructs notions of sensual mediation determines in fact the manner in which one comes to articulate a sensual, perceptual medium.

While modern literature has portrayed extramission as a form of haptic sight, the irony is that extramission according to Plato and Empedokles was grounded on a similar notion of the medium as well. Plato's theory of extramission postulated vision as emerging from rays being projected from both the eye and the object, which coalesce in the intervallic space between viewer and object. As Plato writes in the *Timaeus*:

[The stream of vision] flows out (ἐκπίπτον) like onto like, and coalescing (συμπαγές γινόμενον) therewith it forms one kindred substance along the path of the eye's vision, wheresoever the fire which streams (προσπίπτον) from within

ὥστ' ἀναγκαῖον τι εἶναι μεταξύ: κενοῦ δὲ γενομένου οὐχ ὅτι ἀκριβῶς, ἀλλ' ὅλως οὐθὲν ὀφθῆσεται." Aristotle, *On the Soul* 419a18–22, ed. and trans. W. S. Hett (Cambridge, MA, 1957), 106–7.

8 Aristotle, *On the Soul* 423a23–423b27, ed. and trans. Hett, 130–35, esp. 423b15 (132–33).

collides with [those of] an obstructing object without. . . .

It is from the combination with each other of the inner and outer fires on the smooth surface [of a mirror] . . . that all such reflections necessarily result, owing to the fire of the reflected face coalescing (ξυμπαγοῦς γιγνομένου) with the fire of the vision.<sup>9</sup>

Although difficult to penetrate, Plato's passage in the *Timaeus* already presents the flowing out and flowing toward of rays, compounded in the space betwixt, as enabling the possibility of sight. In this construct, the mirror best captures for Plato the theory of united rays whereby the intervallic space of the medium is made palpably present and serves as a plane of refraction where the two rays meet. Thus, the mirror operates as the perfect analogical reification of the medium in his thinking. In regards to this mediating space, Plato's theory is much closer to Aristotle's eventual theorization of sight, except for the fact that it does not reify the intervallic space where the rays unite into a material and active space as does Aristotle's notion of the transparent. Instead, Plato's medium is merely a point of encounter, a place where the optical rays emerging from both the eyes and the object fuse. These ideas would continue to be elaborated upon by antique, late antique, and Byzantine commentators. With each subsequent clarification, the Platonic theory grew into a concisely robust theory against competing visions of extramission and intromission. This resulted in a compromise between the various competing camps since it afforded the effusion of rays from both object and viewer, and this lent itself to a synthesis with Aristotle's theory by late antique commentators. As such, while there are variants in the physical mechanics of the theories of Aristotle, Plato, Empedokles, and Demokritos, all of these theories rely on the primacy of a medium between viewer and object.

9 "ὅταν οὖν μεθήμερινὸν ἢ φῶς περὶ τὸ τῆς ὀψευὸς ῥεῦμα, τότε ἐκπίπτουν ὅμοιον πρὸς ὅμοιον, συμπαγὲς γενόμενον, ἐν σώμα οἰκειωθὲν συνέστη κατὰ τὴν τῶν ὀμμάτων εὐθυωρίαν, ὅπῃ περ ἂν ἀντερειδῇ τὸ προσπίπτον ἐνδοθεν πρὸς ὃ τῶν ἑξω συνέπεσεν. . . . ἐκ γὰρ τῆς ἐντὸς ἐκτός τε τοῦ πυρὸς ἐκατέρου κοινωνίας ἀλλήλοις, ἐνός τε αὐτῶν περὶ τὴν λειότητά ἐκάστοτε γενομένου καὶ πολλαχῇ μεταρρυθμισθέντος, πάντα τὰ τοιαῦτα ἐξ ἀνάγκης ἐμφαίνεται, τοῦ περὶ τὸ πρόσωπον πυρὸς τῷ περὶ τὴν ὄψιν πυρὶ περὶ τὸ λείον καὶ λαμπρὸν συμπαγοῦς γιγνομένου." Greek text with translation available in Plato, *Timaeus* 45c–46b, ed. and trans. R. G. Bury (Cambridge, MA, 2005), 100–105.

Thus, no matter to which theory a Byzantine may have subscribed, a degree of separation was central to the Byzantine theory of vision. Sight was *never* a vehicle for unmediated, haptic contact with an image.

## The Problem of Tactility

A close analysis of the teachings on vision in Byzantine thought demonstrates how a confusion of sight with touch could have first emerged from the popular writings of Euclid, Ptolemy, the Stoics, and Galen via Byzantine thinkers and texts such as Symeon Seth, George Pachymeres, and the *Souda*. Antique and post-antique sources grappled precisely with the manner in which previous writers on vision deployed metaphors of touch to explain *all* the senses, which in Nelson's reading of the Byzantine texts and their sources resulted in a haptic version of sight. Following Foucault, Nelson attempted to extrapolate the Byzantines' "loquacious gaze," committed to the idea that, in his own words, "to consider the act of seeing in a certain society or period leads inextricably to general issues of cultural construction and maintenance."<sup>10</sup> In other words, Nelson attempted to see how precisely such metaphors enabled a practiced theory of vision. Yet it is necessary to go beyond metaphors to consider the technical terminology Byzantine scholars used to describe sensual experience at large, even beyond sight alone.

The metaphor of touch appears quite prominently in the Stoics' theories of vision, which likened sight perception to that created as by the touch of a walking stick. David Lindberg, in his classic survey of theories of vision, rightly observes that the teachings of Plato, Aristotle, and the Stoics did not suggest that sight occurred through the emanations or grasping of the essences of visible objects, but, in Lindberg's words, "by the qualitative changes produced by the object in a medium suitably prepared to receive them."<sup>11</sup> In the Stoics' conception, the *optical pneuma* is that all-pervasive medium that is composed of a mixture of air and fire. The optical pneuma flows from the seat of consciousness to the eye and activates the air adjacent to the eye by placing it in a state of tension or stress, which, when illuminated, made contact with the visible object.

10 Nelson, "To Say and to See" (n. 1 above), 145.

11 D. C. Lindberg, *Theories of Vision from Al-Kindi to Kepler* (Chicago, 1996), 9–11, esp. 10.



This theory echoes many of the qualities espoused by Aristotle's own theories, mainly producing a notion of sight that relies on a robust materialization of that mediating space as conductive matter—a reification per se of the Platonic iteration of this medium as simply an interval where fusion occurs.<sup>12</sup> In the Stoics' purview, sight may be likened to touch. But, the form of touch described is not that of unmediated contact. Instead, it is an act of touch that occurs *through* the transmission of sensual data via the mediation of the optical pneuma.

A critical point of comparison for Byzantium is the late antique theory of Galen, which featured prominently in tenth- and eleventh-century Arabic science. His work was certainly well known in Byzantium, as evidenced, for example, by the popular middle Byzantine medical text *De natura hominis* by Meletios the Monk.<sup>13</sup> Galen's theories also elaborated on the *instrumentality* of the intervening air and articulated a theory of extramission reliant on quasi-haptic sight. Galen sees the air as an extension of the sensory through the outpouring of the pneuma and thus his description of sight, while deeply indebted to the Stoics, relies upon an allusion to touch. He clarifies, however, that it is impossible to say that the optic pneuma extends to and envelops the object being viewed. He claims rather that it activates the air before it, causing this activation to *ripple* through the continuum of air, similar to the motion effected upon the transparent in Aristotle.<sup>14</sup> Galen unequivocally states the importance of the medium when he writes, "Now it is clear and agreed to by all that we see through the medium of air (διὰ μέσου τοῦ ἀέρος)," yet he goes on to question precisely the level to which this intermediate air mediates.<sup>15</sup> When Galen explicitly criticizes the form

of mediation enabled by the walking-stick metaphor in the Stoics' theory, he does so to clarify that since touch cannot transmit color, size, and position this metaphor is wholly in error:

The nerve itself is a part of the brain, like a branch or offshoot of a tree, and the member to which the part is attached receives the power from the part into the whole of itself and thus becomes capable of discerning the things that touch it. Something similar happens also in the case of the air that surrounds us. When it has been illuminated by the sun, it is already an instrument of vision of the same description as the pneuma arriving from the brain; but until it is illuminated it does not turn into a sympathetic instrument in accordance with the change effected by the outflow of the pneuma into it. The Stoics, then, must not say that we see by means of the surrounding air as with a walking stick.<sup>16</sup>

For Galen, the walking-stick analogy makes the metaphor of touch too literal for comfort, potentially suggesting that sight is simply a species of touch at a distance, the optical pneuma then being that through which pressures are sent back to the body. This is a fallacy for Galen given that touch cannot grasp a colored body.

Ptolemy, whose work built on Euclid's theory of optical rays, is likewise in line with the Stoic depiction of pneuma. Ptolemy does not privilege Euclid's model of independent visual rays, but rather considers the efflux of the eyes to be a unified force similar to the pneumatic emission. In fact, given its strict geometric outlook, Euclid's model—while rooted in the notion of rays being emitted as a cone from the eye—is not fully clarified in terms of the physiological operation of

12 See *ibid.*, 219 n. 58.

13 Meletios the Monk, *De natura hominis* (PG 64:1069–1310). See J. Lascaratos and M. Tsiros, "Ophthalmological Ideas of the Byzantine Author Meletius," *Documenta Ophthalmologica* 74 (1990): 31–35; Cf. PG 64:1069–1310; R. Reneham, "Meletius' Chapter on the Eyes: An Unidentified Source," *DOP* 38 (1984): 159–68. On the dating and placement of the Meletios text, see S. R. Holman, "On Phoenix and Eunuchs: Sources for Meletius the Monk's Anatomy of Gender," *JEChSt* 16, no. 1 (2008): 79–101.

14 Greek text with translation in Galen, *On the Doctrines of Hippocrates and Plato*, 7.4.20–5.12, ed. and trans. P. De Lacy, *Corpus medicorum Graecorum*, vol. 4.1.2, part 2 (Berlin, 1980), 452–55.

15 "Τὸ μὲν οὖν διὰ μέσου τοῦ ἀέρος ὁρᾶν ἡμᾶς ἐναργές ἐστιν καὶ πᾶσιν ὁμολογούμενον." Galen, *Hippocrates and Plato*, 7.7.16, ed. and trans. De Lacy, 472–73.

16 "αὐτὸ τε γὰρ τὸ νεῦρον ἐγκεφάλου μέρος ἐστὶν οἷόν περ ἀκρεμῶν ἢ βλάστημα δένδρου, τό τε μέλος εἰς δὲ τὸ μέρος ἐμφύεται τὴν δύναμιν αὐτοῦ δεχόμενον εἰς ὅλον ἑαυτὸ διαγνωστικὸν γίνεται τῶν ψαυόντων αὐτοῦ. παραπλήσιον οὖν τι καὶ πᾶσι τοῦ περιέχοντος ἡμᾶς ἀέρος γίνεσθαι. πεφωτισμένος γὰρ ὑπὸ τοῦ ἡλίου τοιοῦτόν ἐστιν ἡδὴ [τὸ] τῆς ὀφθαλμοῦ ὄργανον οἷον τὸ παραγιγνόμενον ἐξ ἐγκεφάλου πνεῦμα: πρὶν φωτισθῆναι δέ, κατὰ τὴν ὑπὸ [τῆς] τοῦ πνεύματος εἰς αὐτὸν ἐκ [τῆς] βολῆς ἐναποτελουμένην ἀλλοίωσιν ὁμοιοπαθὲς ὄργανον οὐ γίνεσθαι. μὴ τοίνυν ὡς διὰ βακτηρίας τοῦ περὶ ἀέρος ὁρᾶν ἡμᾶς οἱ Στωϊκοὶ λεγέτωσαν." Galen, *Hippocrates and Plato*, 7.7:19–20, ed. and trans. De Lacy, 474–75.

sight. All that can be reasonably deduced from Euclid, through the first three definitions of the *Optics*, is that optical rays project from the eye, creating a cone with the eye as its vertex and the object seen as its base, and that only the things upon which the visual rays fall are able to be seen.<sup>17</sup> Certainly, Euclid subscribes to a theory of extramission, but it cannot be definitively inferred what the ontological and physiological realities of these optical rays are and what their relationship is to the other senses and perception as a whole. Thus, Euclid's emergence in George Pachymeres' *Quadrivium* from around 1300 evidences a mathematical treatise on optics, but does not contribute significantly to the question of sight's tactile operation, given that it does not address the nature of these rays and their actions.<sup>18</sup> Euclid's text shows little evidence for the physiology of sight beyond a mere efflux of optical rays for geometric calculation. Pachymeres included the treatise only because of its value for the third of the four mathematical fields of arithmetic, music, geometry, and astronomy, not for its contribution to physics or anthropology.<sup>19</sup> Thus it would be hasty to assume from his inclusion of the *Optics* any indication that Pachymeres held to a theory of sight as haptic extramission.

Observing the lack of a physiological explanation of the visual rays in the Euclidean *Optics*, Ptolemy clarifies that sight cannot be said to be a species of touch, but rather merely analogous to it at most.<sup>20</sup> Ptolemy, therefore, invokes touch in his *Optics* only through the language of analogy.<sup>21</sup> For instance, when describing the eye's ability to perceive concave and convex surfaces, Ptolemy states that the visual rays comprehend those objects similar to the manner in which touch also can

perceive their curvature.<sup>22</sup> While he compares the two senses' ability to identify these qualities, Ptolemy never suggests that sight is a species of touch. In fact, early in his text, Ptolemy clarifies this matter:

A [sole] proper sensible can be found that is appropriate to each of the senses; e.g., the quality of "resting the hand" for touch, savors for taste, sounds for hearing, and odors for smell. But among the things that are common to the senses according to the origin of nervous activity, sight and touch share in all except color, for color is perceived by no sense but sight. Thus, color must be the proper sensible for sight, and that is why color is taken to be what is primarily visible after light.<sup>23</sup>

Hence, while Ptolemy is attempting to catalogue the commonalities of the senses, he is sure to distinguish the uniqueness of sight—like others before him—as its ability to perceive color, which sets it apart from all other senses. At the same time, Ptolemy is also arguing for specificity of sensual media, whereby each sense is unique to itself by virtue of their unique sensibles. Thus, Ptolemy's analogies between sight and touch cannot be interpreted as suggesting that sight is touch or operates as touch, for if that were true then under Ptolemy's own principles the eye would be wholly unable to perceive colors and the faculty of sight would not be possible, nor would any of the senses be unique or proper to themselves.

Symeon Seth, a contemporary of Michael Psellos, discusses sight in his *Conspectus rerum naturalium*, building on Ptolemy's *Optics*. There, Symeon says that the mathematicians and many of the philosophers believe that rays come out of the eyes and apprehend (καταλαμβάνουσι) the object of sight. This passing remark demonstrates the problematic use of metaphor

17 Euclid, *Opera omnia*, ed. I. L. Heiberg and H. Menge, vol. 7 (Leipzig, 1895), 154–56.

18 George Pachymeres, *Quadrivium*, ed. P. Tannery (Vatican City, 1940), esp. 313–14.

19 See G. Katsiampoura, "The *Quadrivium* of 1008 and Pachymeres' *Syntagma*: Comparing Two Byzantine *Quadrivia*," in *Libri di scuola e pratiche didattiche: Dall'atichità al Rinascimento*, vol. 2, ed. L. Del Corso and O. Pecere (Cassino, 2010), 409–24.

20 See A. M. Smith, *Ptolemy's Theory of Visual Perception* (Philadelphia, 1996), 22–23.

21 The text of Ptolemy's *Optics* comes down to us through a Latin translation produced by a Byzantine Greek. For the Latin text, see Ptolemy, *Optics* in A. Lejeune, *L'Optique de Claude Ptolémée dans la version latine d'après l'arabe de l'émir Eugène de Sicile* (Louvain, 1956).

22 Ptolemy, *Optics* 2.67, trans. Smith, *Ptolemy's Theory*, 99.

23 "Possibile est inueniri unicuique sensuum proprium sensible conueniens, ut species repulse manus in tactu, et humorum in gustu, et uocum in auditu, et odorum in odoratu. In omnibus uero que secundum principum neruosum communia sunt sensibus, tactus et uisus participant sibi, excepto in colore. Color enim nullo sensuum dinoscitur nisi per uisum. Debet ergo color esse sensibile proprium uisui, et ideo factus est color id quod primo uidetur post lumen." Ptolemy, *Optics* 2.13, ed. Lejeune, *L'Optique de Claude Ptolémée*, 17, trans. Smith, *Ptolemy's Theory*, 74–75.

in these sources, since this might suggest that Symeon subscribed to a haptic extramission where there was a literal touching and grasping of the object seen. However, in order to properly understand Symeon, it is necessary to contextualize his passage, paying careful attention to his sources and other discussions on the senses. His entry on sight reads, in full, as follows:

Concerning how we see, the ancients have many quarrels and both sides confirm each their own belief, just as you might question the first philosopher, [one] will question the prevailing [belief] by anyone. On the one hand, the Aristotelians argued that the air transmits the images of the things seen onto the crystalline in the eye and this being transparent (διαφανές) accepts the image (τύπον) of the thing seen. On the other hand, the geometricians and many of the philosophers declared that some rays come out (ἐξέρχονται) of the eyes and seize (καταλαμβάνουσι) the thing seen, these being comparable to the rays of the sun. For just as when the sun gushes them forth they instantaneously shine upon here, despite there being a great interval between the sun and the earth, in this way our sight [can] at the same time immediately seize the heavens being looked at. And whence the rays of the sun traverse, thither also goes sight, as upon diaphanous bodies, and whence they are prevented from penetrating, thither sight does not proceed, and whence the rays of the sun reflect, thither sight also makes a reflection, as on smooth bodies. For when the sun shines forth on pure water we see the rays reflecting from this and when we gaze at the water our sight is reflected, therefore to us is visible both the things that are above the water and those things that are in it. In the same way, upon mirrors the rays of the sun reflect clearly, and even go so far as to burn when coming from concave mirrors. But sight reflects when we see its [= our face's] likeness (ὁμοίωμα), after it is being reflected toward our face, and think we see it in the mirror. And up to there the disputed [images] are equally scaled and equally balanced. But one of the geometers, having discovered the reflection in the water of the face (ὄψεως), and having relied on this

through bare sensation, demonstrated proofs more powerful than the other geometers. For if someone were to put in some hollow container a ring or coin or some other object and set the vessel far enough away that they could not see the [object], when water is poured into it, [the object] would become visible. From which they proved that sight passes straight through the air, but is refracted in the water. For this explains the appearance of a handle refracted in the water, when sight succumbs to this experience it thinks [the refraction] to be the thing seen. Thus, on this same basis, just as is demonstrated in the *Optics* (ἐν τοῖς ὀπτικοῖς), in the air the farther the things seen are, the smaller they appear; but in water [it is] the opposite. For the deeper the water is, the larger the thing in its depth seems. Hence, it is evident that the belief advocating that the emissions of rays is the source of sight is more sound. Ptolemy says in the *Optics* (ἐν τοῖς ὀπτικοῖς) that the optical pneuma is some ether-like thing of the fifth essence (τῆς πέμπτης οὐσίας).<sup>24</sup>

24 “Περὶ τοῦ πῶς ὁρῶμεν πολλὰς ἔσχον οἱ παλαιοὶ ἀμφιβολίας καὶ ἄμφω τὰ μέρη τοσοῦτον ἕκαστον τὴν ἰδίαν δόξαν ἐκράτουν ὡς καὶ τὸν πρῶτον φιλόσοφον ἐπαπορήσαι τίνι τούτων τὴν νικῶσαν ἐπιψηφίσειτο. οἱ μὲν οὖν Ἀριστοτελικοὶ ἐδόξασαν ὡς τὰ τῶν ὁρῶμενων ἰνδάλματα διαπορθμεύει ὁ ἀήρ ἐπὶ τὸ κρυσταλλοειδές τὸ ἐν τῷ ὀφθαλμῷ καὶ τοῦτο διαφανές ὃν δέχεται τὸν τύπον τῶν ὁρατῶν. οἱ δὲ γεωμέτραι καὶ πολλοὶ τῶν φιλοσόφων ἀπεφάναντο ὡς ἀκτίνες τινες ἐξέρχονται ἐκ τῶν ὀφθαλμῶν καὶ καταλαμβάνουσι τὸ ὁρατόν, παρειακάσαντες ταῦτα ταῖς τοῦ ἡλίου ἀκτίσιν. ὥσπερ γὰρ αὐταὶ ἅμα τῷ τὸν ἥλιον ἀνατεῖλαι ἀχρόνως ἐπιλάμπουσι τοῖς τῇδε, πολλοῦ τοῦ διαστήματος μετὰ τῆς γῆς καὶ τοῦ ἡλίου ὄντος, οὕτω καὶ ἡ ἡμετέρα ὄψις ἅμα τῷ ἀναβλέψαι καταλαμβάνει ἀχρόνως τὸν οὐρανόν. καὶ ἔνθα ἂν διαπερῶσιν αἱ ἡλιακαὶ ἀκτίνες, ἐκεῖσε καὶ ἡ ὄψις, ὡς ἐπὶ τῶν διαφανῶν σωμάτων, καὶ ἔνθα κωλύονται αὐταὶ διελθεῖν, καὶ ἡ ὄρασις οὐ διαβαίνει, καὶ ἔνθα ἀνακλᾶται ἡ ἡλιακὴ ἀκτίς, ἐκεῖθεν ἀντανάκλασιν ποιεῖται καὶ ἡ ὄψις ὡς ἐπὶ τῶν λείων σωμάτων. καὶ γὰρ ὅτε ἐπιλάμπει ὁ ἥλιος ὕδατι καθαρῷ, ὁρῶμεν τὰς ἀκτίνας ἀπὸ τούτου ἀνακλωμένας καὶ ἡμῶν ὁράντων τὸ ὕδωρ ἀνακλᾶται ἡ ἡμετέρα ὄψις, ὥστε φαίνεσθαι ἡμῖν τὰ ἄνωθεν τοῦ ὕδατος καὶ τὰ περὶ ἐν τῷ ὕδατι ὄντα. ὡσαύτως καὶ ἐπὶ τῶν κατόπτρων ἀνακλᾶται προδήλως ἡ ἡλιακὴ ἀκτίς, καὶ τοσοῦτον ὡς ἀπὸ τῶν κοίλων κατόπτρων καὶ καίειν· ἀνακλᾶται δὲ ἡ ὄψις ἐπεὶ ἀντανανκλωμένης αὐτῆς πρὸς τὸ ἡμέτερον πρόσωπον, ὁρῶμεν τοῦτο τὸ ὁμοίωμα καὶ δοκοῦμεν ἐν τῷ κατόπτρῳ ὄραν. καὶ μέχρι τούτου ἰσόρροπα καὶ ἰσοτάλαντα τὰ ἀμφισβητούμενα ἦν. ἐφευρὼν δὲ τις τῶν γεωμετρῶν τὴν ἐν τῷ ὕδατι τῆς ὄψεως ἀνάκλασιν, καὶ τοῦτο πιστωσάμενος δι’ αὐτῆς τῆς αἰσθήσεως, δυναμικωτέρας τῶν γεωμετρῶν τὰςδείξεις ἀπέδειξεν· εἰ γάρ τις ἐν τινὶ κοίλῳ ἀγγεῖῳ θήσῃ δακτύλιον ἢ νόμισμα ἢ ἑτέρον τι τῶν σωμάτων καὶ ἀπομακρυνεῖ ὥστε μὴ τοῦτο ὄραν, ὕδατος

Beginning with a summary of the Aristotelian theory of sight, Symeon soon turns his attention to describing the view espoused by the “mathematicians and many of the philosophers,” who describe how rays emerge from the eyes and seize the visual object (ἀκτίνες τινες ἐξέρχονται ἐκ τῶν ὀφθαλμῶν καὶ καταλαμβάνουσι τὸ ὁρατόν). Here, Symeon aptly stresses the views of the extramissionists in juxtaposition with those of the Aristotelians, and the rest of his commentary devotes itself to explaining precisely the workings of this latter theory. However, rather than relying on Platonic extramission, as might be expected, Symeon is instead interested in the mathematical concern of optics. Therefore, rather than explaining the physiology of seeing, Symeon is dealing with geometrical properties of optical rays. His treatise is deeply indebted to Ptolemy’s *Optics* and exhibits a strong interest in Euclidean geometry. This is evidenced by the fact that Ptolemy is the only figure mentioned by name from the geometers. There is also the explanatory excursus into Ptolemy’s “floating coin” experiment, where a coin is placed in an empty cup until it is obscured from view and then water is poured in so as to see the refracted image of the coin on the surface. This derives directly from Ptolemy’s *Optics*.<sup>25</sup> Furthermore, the text likewise evidences knowledge of other optical geometry (not addressed directly by Ptolemy), such as the study of so-called burning mirrors, attested in sources from Euclid and Anthemios of Tralles to Arabic thinkers contemporary with Symeon Seth.<sup>26</sup>

ἐπιχεθέντος τούτῳ, ὀφθῇσεται. ἐξ οὗ ἐτεκμήραντο ὡς διὰ μὲν τοῦ ἀέρος ἰθυτενῶς ἢ ὅψις δίδεισιν, ἐν δὲ τῷ ὕδατι περικλᾶται. διὰ τοῦτο γὰρ καὶ ἡ κόπη ἐν τῷ ὕδατι περικεκλασμένη φαίνεται, τῆς ὅψεως τοῦτο τὸ πάθος ὑφίσταμένης καὶ δοκούσης τοῦ ὁρωμένου τοῦτο εἶναι. διὰ ταύτην οὖν τὴν αἰτίαν, ὡς ἐν τοῖς ὀπτικοῖς δείκνυται, ἐν μὲν τῷ ἀέρι ἐφ’ ὅσον τὰ ὁρώμενα πορρώτερον ἢ, μικρότερα φαίνεται, ἐν δὲ τῷ ὕδατι τὸ ἀνάπαλιν. ὅσον γὰρ ἐστὶ βαθυύτερον τὸ ὕδωρ, τοσοῦτον τὰ ἐν τῷ βάθει αὐτοῦ μείζονα φαίνεται. ἐξ ὧν δῆλον ὡς ὑγιεστέρα ἐστὶν ἡ δόξα ἢ δι’ ἀκτίνων ἀπὸ τῶν ὀφθαλμῶν ἐκπεμπομένων πρεσβεύουσα γίνεσθαι τὴν ὄρασιν. φησὶ δὲ ὁ Πτολεμαῖος ἐν τοῖς ὀπτικοῖς ὅτι αἰθερώδεις τί ἐστί καὶ τῆς πέμπτης οὐσίας τὸ ὀπτικὸν πνεῦμα.” Symeon Seth, *Conspectus rerum naturalium* 4.71–74, ed. A. Delatte, *Anecdota Atheniensia et alia*, vol. 2 (Liège, 1939), 71–73.

25 Ptolemy, *Optics* 5.5–7, in Smith, *Ptolemy’s Theory*, 230–32.

26 The study of “burning mirrors” is described in Euclid’s *Catoptrics*, proposition 30, at length and with further nuance in Diokles’ treatise *On Burning Mirrors* (which comes down to us only as an Arabic translation of the Greek original), in the writings of Anthemios of Tralles on conics, and in the treatise by Ibn Sahl’s *Fī al-‘āla al-mubriqa* (the *On Burning Instruments*), written in Baghdad around 984. See Euclid, *Catoptrics* prop. 30, *Euclidis opera*

The emphasis on Euclid and Ptolemy, and the focus on the experiment of the floating coin and burning mirrors are notable given their shared prominence in contemporary Arabic texts. It is necessary to note Symeon Seth’s uniqueness. He learned astronomy from Arabic texts, translated the *Kalilah wa Dimnah* from the Arabic, and traveled to Egypt between 1057 and 1059, demonstrating his fluency in Arabic and intimate knowledge of Arabic sources.<sup>27</sup> Thus, it would be reasonable to assume that Symeon Seth would have been familiar with contemporary Arabic writings on vision, which followed in the tradition of Plato, Galen, Euclid, and Ptolemy in their focus on emissions from the eye and their mediated contact with the visible object. The contemporary Arabic treatises often address the adjoining emanation from the object that enables sight, as evidenced in the writings of Hunayn ibn ‘Ishāq and Al-Kindī in the ninth century. Likewise, the Arabic theories’ reliance on either a united-rays theory or an optical pneuma would thus have been in keeping with contemporary Byzantine thinking. As such, the learning evidenced by Symeon Seth’s account merits greater independent study, beyond the scope of this argument, in order to place his work within the broader Mediterranean world. While it is difficult to assess with certainty Symeon’s knowledge of contemporary Arabic optics, the selection of Symeon Seth’s examples in his description is in keeping with the same examples and areas of interest in the works of Ibn Sahl, al-Haytham, Hunayn ibn ‘Ishāq, and Al-Kindī. Furthermore, what is notable here is that the treatises of Euclid and Ptolemy were Byzantine pedagogical sources, not for medical or scientific theories about sight but only for mathematics, which makes Symeon’s citation of Euclid and Ptolemy’s work in *Conspectus rerum naturalium* striking. While

*omnia*, vol. 7 (Leipzig, 1895), 285–343, esp. 340–42; Diokles, *On Burning Mirrors: The Arabic Translation of the Lost Greek Original*, ed. and trans. G. J. Toomer (Berlin, 1976); G. L. Huxley, *Anthemios of Tralles, A Study in Later Greek Geometry* (Watertown, MA, 1959); R. Rashed, “A Pioneer in Anacalistics: Ibn Sahl on Burning Mirrors and Lenses,” *Isis* 81, no. 3 (1990): 464–91. See also A. M. Smith, *Ptolemy and the Foundations of Ancient Mathematical Optics: A Source Based Guided Study* (Philadelphia, 1999), 153–60.

27 On Symeon Seth and his learning, see P. Magdalino, “The Byzantine Reception of Classical Astrology,” *Literacy, Education and Manuscript Transmission in Byzantium and Beyond*, ed. C. Holmes and J. Waring (Leiden, 2002), 33–58, esp. 46–48; J. Scarborough, “Symposium on Byzantine Medicine: Introduction,” *DOP* 38 (1984): ix–xvi, esp. xiii–xiv; Delatte, *Anecdota Atheniensia*, 1–2.



this scant evidence cannot securely attest to his familiarity with his Arab contemporaries' works, it nevertheless suggests a certain culture of pan-Mediterranean learning with similar areas of discussion and orientation.<sup>28</sup>

While Symeon Seth can be placed squarely in the extramissionist camp on account of his attribution of the eyes' effluxes to the Ptolemaic optical pneuma, it is also necessary to consider the theoretical implications of the argument's reliance on the work of Ptolemy. Simply put, we should understand Symeon's optical pneuma as being rooted in the concept of its mediating power between the organ of sense and the sensible object. Symeon in this work is specifically addressing the concerns of the mathematicians, who stressed visual rays as a mathematical construct for the calculation of reflection and refraction, as the floating coin and burning mirrors experiments suggests. Symeon's Arabic contemporary, Ibn al-Haytham, for instance, advocated for the preservation of the visual rays for the sake of geometric computations, despite his being an intromissionist who argued that the efflux of rays were not the cause of sight. Thus, it would be hasty to assume that the visual rays here prescribe a haptic theory of vision, since even intromissionists in the period relied on its mathematical efficacy. The effluence model, however, is indeed commensurate with Ptolemy's optical pneuma, thus stressing Symeon's nuanced and careful knowledge of the functions of the Ptolemaic pneuma, which while being a unified efflux, could still be abstracted into individual rays for the sake of mathematics.

In the subsequent entry on hearing, Symeon opens his discussion with a quick summary of the sense of sight, simply stating: "The creator has made

the eye spherical and projecting out, just as the optical pneuma is destined to go out (ἐκπέμπειν μέλλοντα) toward the things seen and to seize them (καταλαβεῖν)."<sup>29</sup> Although Symeon Seth subscribes to the theory of optical pneuma, we should not overlook or disregard the tactile suggestion of his use of the term καταλαβεῖν, in both descriptions of the pneuma's emission. The reliance and emphasis on the pneuma possibly speaks to his training as a medical doctor, given that the medical treatise of Meletios the Monk's *De natura hominis* likewise follows in this learning, giving primacy to the treatment of medical ailments through interventions on the optical pneuma. Even Symeon's primary source, Ptolemy, deployed a variety of haptic metaphors, but also repeatedly clarified that sight is not a species of touch since the perception of color is unique to the sense of sight and each sense has its own corresponding sensible. Since it is difficult to assess to what extent Symeon is following Ptolemy's reasoning faithfully, it is necessary to consider the work done by καταλαβεῖν in Symeon's thinking in his entries on the other senses.

Surprisingly, καταλαβεῖν is absent from the entries on hearing, on smell, and even in the combined one on touch and taste. Yet, the term does appear once again immediately after these in the entry on the mind, which additionally deploys sight and light as metaphors for understanding the action of the five mental faculties: mind, intellect, belief, imagination, and perception (νοῦ, διανοίας, δόξης, φαντασίας καὶ αἰσθήσεως).<sup>30</sup> For instance, Symeon writes, following Plato and Aristotle, that just as vision clasps (δεῖται, resonant with καταλαβεῖν) light for the actualization of sight, the mind clasps meaning for intellection; and, following Gregory of Nazianzos, just as the sun gives off light for seeing, the divine gives meaning for the mind.<sup>31</sup> Then, he continues,

28 Symeon Seth's similarities, skills, and travel should lead us to consider learning in the Mediterranean world not as necessarily rooted on clear-cut buffer zones of encounter and translation, but as a process of inquiry mutually converging around a certain body of canonical texts. That these texts were Greek, translated for the Arab- and Persian-speaking worlds, attests to thriving avenues of interchange. Even if a given text was not canonical enough to cite in an encyclopedia for the emperor (i.e., the *Souda*), particularly when it corroborated elementary ideas in the established literature on vision, its findings or point of view would still be known to Byzantine scholars such as Symeon Seth and his colleagues. See, for example, P. Magdalino, "The Road to Baghdad in the Thought-World of Ninth-Century Byzantium," in *Byzantium in the Ninth Century: Dead or Alive? Papers from the Thirtieth Spring Symposium of Byzantine Studies, Birmingham, March 1996*, ed. L. Brubaker (Aldershot, 1998), 195–213.

29 "Τὸν ὀφθαλμὸν ὁ δημιουργὸς ὡς ἐκπέμπειν μέλλοντα τὸ ὀπτικὸν πνεῦμα πρὸς τὸ καταλαβεῖν τὰ ὁρατὰ σφαιροειδῆ καὶ προεξέχοντα πεποίηκε." Symeon Seth, *Conspectus rerum naturalium* 4.75, ed. Delatte, *Anecdota Atheniensia*, 73.

30 "Αἰσθήσεων πέντε οὐσῶν τῆς ψυχῆς, καθάπερ καὶ τοῦ σώματος, ἥτοι νοῦ, διανοίας, δόξης, φαντασίας καὶ αἰσθήσεως, ὁ νοῦς ἐπέχει τὴν πρώτην τάξιν χρώμενος ταῖς λοιπαῖς ὡς ὑπηρετίσιν." Symeon Seth, *Conspectus rerum naturalium* 4.83, ed. Delatte, 78–79.

31 "Πλάτων δὲ καὶ Ἀριστοτέλης φασὶν ὅτι ὥσπερ ἡ ὄψις δεῖται φωτὸς πρὸς τὸ διενεργῆσαι τὴν οἰκείαν ἐνέργειαν, οὕτω καὶ ὁ νοῦς δεῖται πρὸς τὸ νοεῖν τοῦ πρώτου νοῦ. ὡς γὰρ ὁράσεως οὐσης καὶ ὁρατοῦ, εἰ μὴ τρίτον προσῇ τὸ φῶς, μάτην ἔσται ταῦτα, οὕτως ἐπὶ τοῦ νοῦ καὶ τοῦ νοητοῦ, εἰ μὴ ἐπιλάμψῃ ὁ πρῶτος νοῦς ὡς ἀνάλογος τῷ ἡλίῳ ἔστιν, οὐ δύναται ὁ νοῦς ἐνεργεῖν τὴν οἰκείαν ἐνέργειαν. συγκατατίθεται

“For the senses seize (καταλαμβάνουσι) these things, along with imagination and belief. And the mind thinks intelligible things. For each attends to its own kind of knowledge: the intelligible by the mind, the believable by belief, the perceptible by perception.”<sup>32</sup> Here, Symeon Seth uses καταλαβεῖν to stress precisely the mental faculties’ grasping and comprehension of their proper objects of contemplation. This language of grasping is common in the context of cognition and perception, where terms like ἀντίληψις, πρόληψις, and κατάληψις describe various forms of apprehension and comprehension, as shall be discussed further in the context of Photios’s *Homily* 17. Thus, while Symeon Seth might be alluding to a haptic reading of extramission in his use of καταλαβεῖν, this seems highly unlikely. The term is used in his writing to describe cognitive action, and its absence from the entry on touch and taste is telling. The profusion of such haptic terms in commentaries on thinking and perception suggests instead that they refer to the perceptual action of mind seizing the object of sensation, not a literal indicator of haptic perception. Thus, it is necessary to qualify this notion of seizing or taking hold as an indication of the sensual contact between seer and seen, which makes perception possible, rather than as a confusion or collapse of sight and touch.

The misleading language of touch is not unique to Symeon Seth, but does indeed appear in passing in other Byzantine sources dedicated to the senses. The *Souda*’s entry on sight (ὄψις), for instance, discusses the other four senses to clarify the faculty of sight:

Seeing. Also, contemplation. “So the things before the city shone with silver and bronze, and nothing was more delightful for them or appeared more terrible to the enemies than that sight.”<sup>33</sup> [Note] that sight distinguishes the twelve colors: white and black, and their intermediates, [i.e.] yellow and grey, pale, red, blue,

purple, bright, dark. Hearing distinguishes a high and low sound, smelling distinguishes good and bad odors, and the intermediates: rotten and wet [odors], whether melted or flavored with thyme. Taste distinguishes sweet and bitter flavors, and the five intermediates. For there are seven flavors: sweet, bitter, sharp, acrid, astringent, porous, salty, winter cherry. Touch distinguishes many things, heavy, light objects, and the intermediates: rough, smooth and the intermediates; dry and wet objects. And four of the senses are in the head and are peculiarly adapted to the organs and are enclosed by them, but touch passes through the head and the body and is common to every sense.<sup>34</sup>

Concluding with a summary of touch, the entry clarifies that touch is “common to every sense” (κοινή πάσης αἰσθήσεως). However, the entry does not draw a direct connection to sight or say that sight is a variant of touch, nor does it state it to be a species of touch. For example, it is common to pair touch and taste together as they are seen to occur in the same manner, taste being understood to be a species of touch at times. Nevertheless, the perspective of the *Souda*’s author is that touch is common to all sensation because it is not confined to particular sense organs but permeates the whole of the body.

Compare this to John of Damascus’s entry on the senses in his *Expositio fidei*. There, John describes sight as the first sense, composed of the nerves of the brain and the eyes, and whose primary perception is color. But along with color, sight can also perceive things like

δὲ τούτοις καὶ ὁ μέγας Γρηγόριος λέγων ὡς καθάπερ ὁ ἥλιος παρέχει τῇ ὄψει τὸ ὄραν, οὕτω δὲ καὶ τὸ θεῖον τῷ νῷ τὸ νοεῖν.” Symeon Seth, *Conspectus rerum naturalium* 4.83, ed. Delatte, 79.

32 “ταῦτα γὰρ αἱ αἰσθήσεις καταλαμβάνουσι καὶ ἡ φαντασία καὶ ἡ δόξα· ὁ δὲ νοῦς νοεῖ τὰ νοητά· ἕκαστον γὰρ οἰκεία γνώσει διαγινώσκειται· τὰ νοητὰ τῷ νῷ, τὰ δοξαστὰ τῇ δόξει, τὰ αἰσθητὰ ταῖς αἰσθήσεσιν.” Symeon Seth, *Conspectus rerum naturalium* 4.84, ed. Delatte, 79–80.

33 Josephus, *Jewish War* 5.351, ed. B. Niese, *Flavii Iosephi opera*, vol. 5 (Berlin, 1895), 351.

34 “Ὅψις· ὁρασις, καὶ ἡ θεωρία. τὰ μὲν οὖν πρὸ τῆς πόλεως ἀργύρῳ καὶ χρυσῷ περιελάμπετο, καὶ τῆς ὄψεως ἐκείνης οὐδὲν οὔτε τοῖς σφετέροις ἐπιτερέστερον οὔτε τοῖς πολέμοις παρέστη φοβερώτερον. ὅτι ἡ ὄψις τῶν δώδεκα χρωμάτων ἐστὶ κριτική, λευκοῦ καὶ μέλανος καὶ τῶν μεταξύ, ξανθοῦ καὶ φαιοῦ, ὠχροῦ, ἐρυθροῦ, κυανοῦ, ἀλουργοῦ, λαμπροῦ, ὀρφνίου. ἡ δὲ ἀκοή κριτικὴ ἐστὶν ὀξέος καὶ βαρέος φθόγγου, ἡ δὲ ὁσφρησις κριτικὴ εὐωδῶν καὶ δυσωδῶν ὁσμῶν καὶ τῶν μεταξύ, σηπομένων τε καὶ βρεχομένων ἢ τηκομένων ἢ θυμωμένων. ἡ δὲ γεῦσις κριτικὴ γλυκεῶν τε καὶ πικρῶν χυμῶν καὶ τῶν μεταξύ εἰ· ἐπτα γὰρ εἰσι χυμοί, γλυκὺς, πικρὸς, ὀξύς, δριμύς, στυφύς, σομφός, ἄλυκός, στρυφνός. ἡ δὲ ἀφή πλειόνων ἐστὶ κριτικὴ· βαρέων, κούφων καὶ τῶν μεταξύ· τραχέων καὶ λείων καὶ τῶν μεταξύ· ξηρῶν καὶ ὑγρῶν. καὶ αἱ μὲν δ’ αἰσθήσεις ἐν τῇ κεφαλῇ εἰσι καὶ ἰδιάζουσιν καὶ περικλείονται ὀργάνοις, ἡ δὲ ἀφή καὶ διὰ τῆς κεφαλῆς καὶ διὰ τοῦ σώματος κεχώρηκε καὶ ἐστὶ κοινὴ πάσης αἰσθήσεως.” “Ὅψις,” *Souda On Line*, ed. and trans. M. Boeri, 2 March 2004, <http://www.stoa.org/sol-entries/omicron/1082> (accessed 12 October 2012).

size and form, locality, the intervening space, number, motion, texture, and the composition of things.<sup>35</sup> Later he discusses touch, stating its commonality to all living things, and whose nerves come from the brain and permeate the entirety of the body. This permeation or commonality simply means that even the other sense organs, like the eye, also have a sense of touch themselves as organs, given that one can feel their eye or nose being touched. After discussing the things that touch can sense, as he has done with all the organs, John of Damascus then states that several of these things are “common to sight and touch” (Κοινὰ δὲ ἀφῆς καὶ ὄψεως), but “it is by sight rather than touch that these things [i.e. nearness of a body and number] are perceived” (Τούτων δὲ μᾶλλον τῆς ἀφῆς ἢ ὄρασις ἀντιλαμβάνεται).<sup>36</sup> John of Damascus offers no indication that sight operates as a form of touch. He speaks only to their overlapping commonalities—as he also does with taste and touch, smell and hearing. Hence, it is possible to glean an understanding, as he says in the last sentence of the entry, that perceptibles appear to the senses proper to themselves (ἰδίοις αἰσθητοῖς).<sup>37</sup> Thus, his statements are

in keeping with the late antique and patristic sources, which while using analogies and comparisons between the senses nevertheless do not confuse their operation.

So the *Souda*’s passing reference to the commonality of touch not only indicates the sense organs’ possession of touch but is also analogous to the Stoics’ notion that sight occurs like the perception enabled by the walking stick of the blind. This is indeed a form of contact, between perceptible and perception, but one that does not enable any form of unmediated or properly tactile contact, since each sense is unique to itself,<sup>38</sup> just as the notion of the optical pneuma does not allow for any more unmediated contact or touch than do Plato’s united rays fusing between the object and the viewer. Particularly, in the work of Aristotle and Ptolemy (as cited above), touch’s inability to perceive color is a crucial argument against the idea that touch is common to sight or a species of it. While the entry for sensation (αἰσθήσεις) in the *Souda* does not offer much in regards to a specific distinction from touch, its derivation from the Aristotelian sources and commentaries helps us to contextualize the entry on sight.<sup>39</sup> For as the latter clarifies, each of the senses is peculiarly adapted to its respective organ(s) and is enclosed by them (ἰδιάζουσιν καὶ περικλείονται ὄργανοις), and thus this idea of a

35 “Πρώτη αἰσθησις ὄρασις. Αἰσθητήρια δὲ καὶ ὄργανα τῆς ὁράσεως τὰ ἐξ ἐγκεφάλου νεῦρα καὶ οἱ ὀφθαλμοί. Αἰσθάνεται δὲ ἡ ὄψις κατὰ πρῶτον μὲν λόγον τοῦ χρώματος, συνδιαγινώσκει δὲ τῷ χρώματι καὶ τὸ κεχρωσμένον σῶμα καὶ τὸ μέγεθος αὐτοῦ καὶ τὸ σχῆμα καὶ τὸν τόπον, ἔνθα ἐστὶ, καὶ τὸ διάστημα τὸ μεταξὺ καὶ τὸν ἀριθμὸν κινήσιν τε καὶ στάσιν καὶ τὸ τραχὺ καὶ λείον καὶ ὁμαλὸν καὶ ἀνώμαλον καὶ τὸ ὀξὺ καὶ τὸ ἀμβλὺ καὶ τὴν σύστασιν, εἴτε ὑδατώδης, εἴτε γεώδης ἤγουν ὑγρὰ ἢ ξηρά.” John of Damascus, *Expositio fidei* 2.18, ed. P. B. Kotter, *Die Schriften des Johannes von Damaskos*, vol. 2 (Berlin, 1973), 32.

36 “Πέμπτη αἰσθησις ἐστὶν ἡ ἀφή, ἥτις κοινή ἐστὶ πάντων τῶν ζώων· ἥτις γίνεταί ἐκ τοῦ ἐγκεφάλου πεμπομένων νεύρων εἰς ὅλον τὸ σῶμα. Διὸ καὶ ὅλον τὸ σῶμα, ἀλλὰ καὶ τὰ ἄλλα αἰσθητήρια τῇ τῆς ἀφῆς ἔχουσιν αἰσθησιν. Ὑπόκειται δὲ τῇ ἀφῇ τὸ ψυχρὸν καὶ θερμόν, τὸ τε μαλακὸν καὶ σκληρὸν καὶ γλίσχρον καὶ κραῦρον, βαρὺ τε καὶ κοῦφον· διὰ μόνης γὰρ ἀφῆς ταῦτα γνωρίζεται. Κοινὰ δὲ ἀφῆς καὶ ὄψεως τὸ τε τραχὺ καὶ λείον, τὸ τε ξηρὸν καὶ ὑγρὸν, παχύ τε καὶ λεπτόν, ἄνω τε καὶ κάτω καὶ ὁ τόπος καὶ τὸ μέγεθος, ὅταν εἴη τοιοῦτο ὡς κατὰ μίαν προσβολὴν τῆς ἀφῆς περιλαμβάνεσθαι, καὶ τὸ πυκνόν τε καὶ μακρὸν ἤγουν ἀραιὸν καὶ τὸ στρογγύλον, ὅταν εἴη μικρόν, καὶ ἄλλα τινὰ σχήματα. Ὁμοίως δὲ καὶ τοῦ πλησιάζοντος σώματος αἰσθάνεται, σὺν τῇ μνήμῃ δὲ καὶ τῇ διανοίᾳ, ὡσαύτως δὲ καὶ ἀριθμὸς μέχρι δύο ἢ τριῶν καὶ τούτων μικρῶν καὶ ῥαδίως περιλαμβανόμενων. Τούτων δὲ μᾶλλον τῆς ἀφῆς ἢ ὄρασις ἀντιλαμβάνεται.” John of Damascus, *Expositio fidei* 2.18, ed. Kotter, 32.

37 “Χρὴ γινώσκειν, ὅτι ἡ μὲν ὄψις κατ’ εὐθείας γραμμὰς ὁρᾷ, ἡ δὲ ὁσφρησις καὶ ἡ ἀκοὴ οὐ κατ’ εὐθείαν μόνον, ἀλλὰ πανταχόθεν. Ἡ δὲ ἀφή καὶ ἡ γεύσις οὐδὲ κατ’ εὐθείαν οὐδὲ πανταχόθεν γνωρίζουσιν, ἀλλὰ τότε μόνον, ὅταν αὐτοῖς πλησιάσῃσι τοῖς ἰδίοις αἰσθητοῖς.” John of Damascus, *Expositio fidei* 2.18, ed. Kotter, 32.

38 This particular line in the *Souda*, referencing touch’s commonality to all the sense, may be attributed to an identical line found in Photios’s *Bibliotheca* for the entry on the *Life of Pythagoras*. The Pythagorean theory of vision was one of extramission, whereby the efflux of rays from the eyes strike the objects, exemplified by the writings of Alkmaeon of Croton, whose theory is described by Theophrastus in his commentary *De sensibus et sensibilibus*. There he suggests that the “gleaming,” transparent quality of the eye reflects the object. This, however, is a problematic assertion given that it does not clarify precisely how the process works. Of particular note in Photios’s summary is that in the brief passage on Pythagoras’s theory of the senses, Photios discusses sight in connection only with the perception of colors, to signal its unique faculty: “According to Pythagoras, Plato and Aristotle, sight is the judge of the twelve colors.” Without differentiating between the theories of these various philosophers, Photios focuses only on the fact that color is exclusive to sight, something which, as clarified above, is incapable of being transmitted through touch. See Photios, *Bibliotheca*, cod. 249, ed. R. Henry, 8 vols. (Paris, 1959–74), 7:128. See also Theophrastus, *De sensibus et sensibilibus* 1.26, ed. G. M. Stratton, *Theophrastus and the Greek Physiological Psychology before Aristotle* (New York, 1927), 88–89. On antique theories of color in Byzantium, see L. James, *Light and Colour in Byzantine Art* (Oxford, 1996), 47–68.

39 “Αἰσθήσεις,” *Souda On Line*, ed. and trans. M. Boeri, 2 May 2002, <http://www.stoa.org/sol-entries/alphaiota/326> (accessed 12 October 2012).

commonality of the senses might be better read in relation to Aristotle's "common sense" (αἰσθησις κοινή). The "common sense" speaks to the associative power of cognition when processing sensual data in the act of perception. That is to say, the "common sense" makes the senses common to one another by constructing a holistic and multisensory image of the thing perceived in the mind, where sight, smell, touch, taste, and sound are integrated in the imagination of the perceptible.<sup>40</sup> Of significant import in Aristotle's common sense is that not only does this mediate the disjuncture of the senses by synaesthetically bringing them together in the mind, but also speaks to the individual specificity of the senses, each of which contributes a unique and particular knowledge to construct this commonality. Hence, the *Souda* pairs a statement on the particularity of each sense to its own organ with the notion of a commonality in touch. The conjunction indicates the syncretic process of perceptual cognition, not the confusion or collapse of different sensory inputs.

This survey sketches out a picture of the intellectual landscape of Byzantine thoughts on vision and their sources. Many writers endeavored specifically to clarify the problem of tactility and contact in relation to sight as they attempted to depict the hidden and obscure perceptual processes that comprise perception, beyond mere sensation alone. This groundwork opens the way for a revision and reconsideration of sources that allegedly hint at haptic sight, demanding a nuanced and critical eye to explore the full range of possibilities offered by their language, their use of specific terminology, and the context in which any metaphors of touch, contact, or grasping appear.

## Revising Our View of Photios's Theory of Sight

With this foundation in place, it is possible to turn to Photios's well-known reference to extramission in his *Homily* 17, which in praising sight's effectiveness over hearing seems to suggest the haptic and tactile power of the extramissive rays. Photios's homily is an indispensable resource because although it emerged from the mind of a well-educated and learned figure, it targeted a diverse audience of Constantinopolitan figures and

peoples within a sacred context. This allows us to understand that while Photios himself may have been referring to a nuanced understanding of vision, his characterization of sight must also have been conveyed in terms that would have been legible to his congregation. Although Photios's thoughts and explanations are quite different in genre and context from the philosophical and medical texts surveyed thus far, they evidence a common theory of vision that would have been accessible and familiar to the listeners of his homily. The key statement in the homily, as translated by Cyril Mango, reads as follows:

For surely, having somehow through the outpouring (προχύσει) and effluence (ἀπορροή) of the optical rays touched and encompassed the object, it (= sight, ὄψις) too sends the essence of the thing seen to the mind, letting it be conveyed from there to the memory for the concentration of unfailing knowledge. Has the mind seen? Has it grasped? Has it visualized? Then it has effortlessly transmitted the forms to the memory.<sup>41</sup>

Photios here uses an interesting doubling of nouns to describe the process of sight: "outpouring" (προχύσει) and "effluence" (ἀπορροή). If regarded as rhetorical flourishes, these terms could be overlooked and the statement may be rendered as Mango does. While the term προχύσει denotes the notion of an outpouring as in the case of a river or sweat issuing from the body, ἀπορροή on the other hand denotes an emanation. Here there is a crucial pairing of prefixes, προ- and ἀπο-, which may be understood as an indication of an emanation forth and from. While this could be read as a description of rays hitting and reflecting off the object, the synchronous deployment of the two words instead seems to allude to the simultaneity of rays being emitted from the eyes and from the object, as would be expected in a Platonic theory of extramission.

40 On the common sense, see P. Gregoric, *Aristotle on the Common Sense* (Oxford, 2007). See also J. Owens, "Aristotle on Common Sensibles and Incidental Perception," *Phoenix* 36 (1982): 215–36.

41 "Καὶ γὰρ καὶ αὐτὴ [= ὄψις] γε δὴπου τῇ προχύσει καὶ ἀπορροῇ τῶν ὀπτικῶν ἀκτίνων τὸ ὁρατὸν οἶονεῖ πως ἐπαφωμένη καὶ περιέπουσα τὸ εἶδος τοῦ δραθέντος τῷ ἡγεμονικῷ παραπέμπεται, ἐκεῖθεν διαπορβευθῆναι διδούσα τῇ μνήμῃ πρὸς ἐπιστήμης ἀπλανεστάτης συνάθροισιν. Εἶδεν ὁ νοῦς, ἀντελάβετο, ἐφαντάσθη, τοὺς τύπους ἀκόπως ἐν τῇ μνήμῃ παρεπέμψατο." *Photios, Homily* 17.2, 305:20–305:3, ed. B. Laourdas, *Ὁμιλίες* (Thessalonike, 1959), 170–71; trans. C. Mango, *The Homilies of Photius, Patriarch of Constantinople* (Cambridge, MA, 1958), 294.



LSJ defines both these words quite similarly, either as emissions pouring out or flowing off, hence it is necessary to consider the appearance and usage of these terms in late antique and Byzantine texts to produce a more nuanced understanding of Photios's passage. As one might expect, *προχύσει* denotes a flowing outward or a deposition of materials, such as mud in a creek bed, and is often used in this explicit manner. For example, Oreibasios, the fourth-century personal physician of Julian the Apostate, uses the term to describe the ejaculation of sperm from the body in his medical writings, based on Galen's work; Theodoret of Kyrrhos in his fifth-century *Commentary on the Psalms* used it to describe the gushing-out of water from stones in reference to Psalm 114:7–8; and George Synkellos in his late eighth- or early ninth-century *Chronography* uses “*προχύσει*” to describe the “sprinkling” (*πρόσχυσιν*), as written in Hebrews 11:28, of lamb's blood upon the doorways during Passover in Exodus 12:13.<sup>42</sup> Such examples are consistent with other uses, which denote a directional outpouring of a substance toward an object. This agrees with what one would expect from *προχύσει* in Photios's text as referring to the rays pouring out from the eyes. However, the crux of the matter here is how we come to understand its counterpart, *ἀπορροή*.

The term *ἀπορροή* is attested often and used in texts relating to vision to describe precisely rays emanating from an object. In Plato's *Timaeus*, for example, the term appears in Plato's discussion of colors emanating from the visible bodies:

This [i.e. color] consists of a flame which issues (*ἀπορρέουσιν*) from the several bodies, and possesses particles so proportioned to the visual stream as to produce sensation; and as regards the visual stream, we have already stated merely the causes which produced it.<sup>43</sup>

Here Plato describes how this fiery emanation from the bodies of visible things produces sensation by uniting with the fiery outpouring from the eyes. Plato deploys

the verb form *ἀπορρέουσιν* to convey specifically the issuing of rays from the object, suggesting a foundation for this term's association with the emanations coming off perceptible things.

In other treatises on vision and philosophy, the term is used to denote specifically this emanation from the outside perceptible body or object, understood as being external to the subject. For example, *ἀπορρέοντα* appears in Psellos's commentary on Aristotle, cited above, as follows:

For, he says, sight perceives by being affected by the things seen, just as each of the other [senses] perceives, but not by making and sending out (*ποιούσα καὶ ἐκπέμπουσα*), and not by being affected by admitting what flows (*ἀπορρέοντά τινα ἀπὸ τῶν αἰσθητῶν*) from the things perceived.

Here Psellos clearly delineates the difference between the rays shooting out of the eyes (*ἐκπέμπουσα*) and the emanations from the object (*ἀπορρέοντα*). Elsewhere in this same commentary, he uses the term to describe as well the intromissionists' theory of the entrance of the atomic *eidola* being emanated by the object (*εἰδωλά τινα ἀπορρέοντα*), as in the case of Demokritos; and the notion of the mixing of optical rays to describe the ones coming from the object (*ἐφαπλουμένας ἀπορροίας*), as in the case of Empedokles.<sup>44</sup> And, furthermore, in his encyclopedic entry on the senses in *De omnifaria doctrina*, Psellos also uses it to describe the operation of sight according to Plato. The sentence there reads:

The act of sight comes into being when the light sent out (*ἐκφερόμενον*) from the eyes comes into contact with the [light] emanating (*τῷ ἀπὸ τῶν σωμάτων ἀπορρέοντι*) from the bodies, the very thing which Plato calls united rays (*συναύγειαν*).<sup>45</sup>

42 See Oreibasios, *Collectionum medicarum reliquiae*, vol. 4, ed. J. Raeder (Leipzig, 1933), 9.23.6 (libri incerti); Theodoret of Kyrrhos, *Commentary on the Psalms* (PG 80:1792); George Synkellos, *Ecloga chronographica*, ed. A. A. Mosshammer (Leipzig, 1984), 142.

43 “*φλόγα τῶν σωμάτων ἐκάστων ἀπορρέουσιν, ὅψει σύμμετρα μόρια ἔχουσιν πρὸς αἴσθησιν: ὅψεως δ' ἐν τοῖς πρόσθεν αὐτὸ περὶ τῶν αἰτίων τῆς γενέσεως ἐρρήθη.*” Plato, *Timaeus* 67c, ed. and trans. Bury, 172–73.

44 The term appears therein six times, and only once in this short treatise does it describe the flowing of rays from the eye, following its same use in the Alexander of Aphrodisias source text. This anomalous appearance emerges as part of a line that chooses to stress the exteriority of the outpouring of the rays from the eye, similar to what occurs in a passage from Aëtius, discussed below. See Psellos, *Περὶ αἰσθήσεως καὶ αἰσθητῶν*, ed. O'Meara, 14–17; cf. Alexander of Aphrodisias, *In librum De sensu commentarium*, ed. Wendland, 32.13–15.

45 “*Ἡ ὁρασις γίνεται ὅταν τὸ ἀπὸ τῶν ὀφθαλμῶν φῶς ἐκφερόμενον συναντήσῃ τῷ ἀπὸ τῶν σωμάτων ἀπορρέοντι, ὅπερ ὁ Πλάτων ὀνομάζει*

In the two excerpts presented here, Psellos neatly uses this language of doubled participles to capture the dual process of Platonic extramission. Notably, a pairing of ἐκ- and ἀπο- participles here convey the outpouring and emanation of rays that unite to make vision possible, analogous to the pairing of προ- and ἀπο- in Photios's own homily.

Psellos's passage in *De omnifaria doctrina* derives closely from a popular text, *De placita philosophorum*, previously ascribed to Plutarch and now attributed to Aëtius, and which summarizes various theories of sight. In the Aëtius text, however, the participial form (ἀπορρέοντος) is used to describe the optical rays that emanate from the viewer, rather than the object. In the words of Aëtius:

Democritus and Epicurus suppose that sight is caused by the entering in (εἰσκρίσεις) of images (εἰδώλων), and by the secretion (ἐκκρισιν) of certain rays which return (ὑποστρεφουσῶν) to the eye after striking upon the object. Empedocles supposes that images are mixed with the rays of the eye; these he styles the rays of images. Hipparchus, that the visual rays extend from both eyes to the superficies of bodies, and give to the sight the apprehension of those same bodies, after the same manner in which the hand touching the extremity of bodies gives the sense of feeling. Plato, that the sight is the splendor of united rays (συναύγειαν); there is a light which goes (ἀπορρέοντος) some distance from the eyes into a congruous air (ὁμογενῆ ἀέρα), and there is likewise a light emitted (ἀπὸ τῶν σωμάτων φερομένου) from bodies, which meets and is joined with the fiery visual light in the intermediate air (περὶ τὸν μεταξὺ ἀέρα), which is liquid and mutable; and the conjunction of these rays gives the sense of seeing. This is Plato's corradiancy, or splendor of united rays (συναύγεια).<sup>46</sup>

συναύγειαν." Michael Psellos, *De omnifaria doctrina*, 108, ed. L. G. Westerink (Nijmegen, 1948), 60.

46 "Δημόκριτος Ἐπίκουρος κατ' εἰδώλων εἰσκρίσεις ὦντο τὸ δρατικὸν συμβαίνειν, καὶ κατὰ τινων ἀκτίνων ἐκκρισιν μετὰ τὴν πρὸς τὸ ὑποκείμενον ἔνστασιν πάλιν ὑποστρεφουσῶν πρὸς τὴν ὄψιν. Ἐμπεδοκλῆς τοῖς εἰδώλοις τὰς ἀκτίνας ἀνέμιξε, προσαγορεύσας τὸ γιγνόμενον ἀκτινείδωλον συνθέτως. Ἱππάρχος ἀκτίνάς φησιν ἀφ' ἐκατέρου τῶν ὀφθαλμῶν ἀποτεινομένας τοῖς πέρασιν αὐτῶν οἷον

Notable for our concerns here is the fact that the text of Aëtius suggests that only the Atomists, such as Democritus and Epicurus, traditionally understood as being the proponents of *intromission*, which see vision as occurring through emission and entrance of rays returning from the object after having struck its surface. And even then, Aëtius stresses that it is only Hipparchos's theory of vision that explicitly explained sight as touch. This clarification here is critical since not only was Aëtius's account selected by the learned Psellos to represent a definitive and comprehensive view of vision and its variants in his encyclopedia, but it is also used in various other encyclopedic sources, ranging from Nemesios's *De natura hominis* to John Stobaeus's *Anthology*.<sup>47</sup>

Curiously, ἀπορρέοντος is used in the Aëtius text to describe Plato's emanation of rays from the eye into the intermediary space. Hence, Aëtius is not emphasizing the act of the active viewer's sending out of rays, but rather on their progression into space. This suggests that the verb, while somewhat flexible in its technical use, nevertheless connotes an inherent exteriority to the viewer. This is consistent with usage in other late antique and Byzantine examples. For instance, consider the term's third-century usage in Plotinos's *Enneads*, in his discourse on love. Plotinos describes the emergence of love as born from the Soul through the action of the gaze looking upon the object of contemplation. Plotinos writes:

This was its first vision, and it looked towards it as to its own good, and rejoiced in its looking, and the vision was of a kind which made it impossible for the visionary to make its gaze

χειρῶν ἐπαφαῖς περικαθαπτούσας τοῖς ἐκτὸς σώμασι τὴν ἀντίληψιν αὐτῶν πρὸς τὸ δρατικὸν ἀποδιδόναι. Πλάτων κατὰ συναύγειαν, τοῦ μὲν ἐκ τῶν ὀφθαλμῶν φωτὸς ἐπὶ ποσὸν ἀπορρέοντος εἰς τὸν ὁμογενῆ ἀέρα, τοῦ δ' ἀπὸ τῶν σωμάτων φερομένου, τοῦ δὲ περὶ τὸν μεταξὺ ἀέρα εὐδιάχυτον ὄντα καὶ εὐτρεπτον συνεκτεινομένου τῷ πυρῶδει τῆς ὀψεως αὕτη λέγεται Πλατωνικὴ συναύγεια." Pseudo-Plutarch (Aëtius), *De placita philosophorum* 4.13, ed. J. Mau, *Moralia*, vol. 5 (Leipzig, 1971), 123, trans. W. W. Goodwin, *Plutarch's Morals*, (Boston, 1905), 168. For the work's textual history, see D. T. Runia, "The Placita Ascribed to Doctors in Aëtius' Doxography on Physics," in *Aëtiana: The Method and Intellectual Context of a Doxographer*, vol. 3, ed. J. Mansfeld and D. T. Runia (Leiden, 2010), 515–75.

47 Nemesios, *De natura hominis* 7, ed. M. Morani (Leipzig, 1987), 58.11–14; John Stobaeus, *Anthologium*, ed. O. Hense and C. Wachsmuth, vol. 1 (Berlin, 1884), 52.7.1–5.

a secondary activity; so that the soul by a kind of delight and intense concentration on the vision and by the passion of its gazing generates something from itself which is worthy of itself and of the vision. So from the power which is intensely active about the object of vision, and from a kind of outflow (*ἀπορρέοντος*) from that object, Love came to be as an eye filled with its vision, like a seeing that has its image with it; and, I suppose, his name most likely came to him from this, because he derives his real existence from seeing.<sup>48</sup>

In Plotinos's text, *ἀπορρέοντος* works double duty: on the one hand, the term might suggest the rays issuing forth from the eyes of the other, who is the object of devotion; or, on the other hand, it might speak to the theory of vision as being produced by these twin effluxes of rays, where here the object of contemplation is emitting its visible rays. Deploying a complex and metaphorical iteration of the theory of vision to explain the birth of Love, Plotinos's use of *ἀπορρέοντος* seems to suggest that the term can be fruitfully applied to that object of sight—even if it too projects optical rays. This object of sight is inherently exterior to the body, just as it is used in Basil of Caesarea's discussion of the evil eye.<sup>49</sup>

48 “Καὶ πρῶτον ἦν ὄραμα αὐτῇ τοῦτο καὶ ἑώρα ὡς πρὸς ἀγαθὸν αὐτῆς καὶ ἔχαιρεν ὁρῶσα, καὶ τὸ ὄραμα τοιοῦτον ἦν, ὡς μὴ πάρεργον ποιείσθαι τὴν θέαν τὸ ὁρῶν, ὡς τῇ οἶον ἡδονῇ καὶ τάσει τῇ πρὸς αὐτὸ καὶ σφοδρότητι τῆς θέας γεννησαί τι παρ’ αὐτῆς ἄξιον αὐτῆς καὶ τοῦ ὁράματος. Ἐξ οὖν τοῦ ἐνεργούντος συντόνως περὶ τὸ ὁρώμενον καὶ ἐκ τοῦ οἶον ἀπορρέοντος ἀπὸ τοῦ ὁρωμένου ὅμμα πληρωθέν, οἶον μετ’ εἰδῶλου ὄρασις, Ἐρως ἐγένετο τάχα που καὶ τῆς προσηγορίας ἐντεῦθεν μᾶλλον αὐτῷ γεγεννημένης, ὅτι ἐξ ὁράσεως τὴν ὑπόστασιν ἔχει· ἐπεὶ τό γε πάθος ἀπὸ τούτου ἔχει ἂν τὴν ἐπωνυμίαν.” Plotinos, *Enneads* 3.5.3 ed. and trans. A. H. Armstrong, *Enneads*, 8 vols. (Cambridge, MA, 1966–88), 3:176–79.

49 Basil of Caesarea's use of the word is curious, and fitting, since Nelson alludes to this text in defense of haptic extramission. In *Homily 11*, “On Envy,” Basil deploys *ἀπορρέοντος* to dismiss superstitions about the evil eye: “Some people believe that envious people inflict harm merely through their eyes . . . by some flowing emission (*ἀπορρέοντος*) of destruction from the eyes of those being envious. I reject this explanation as crude . . . (τοὺς δὲ φθονερούς τινες οἶονται καὶ δι’ ὀφθαλμῶν μόνων τὴν βλάβην ἐπιβάλλειν . . . οἶον βεύματός τινος ὀλεθρίου ἐκ τῶν φθονερῶν ὀφθαλμῶν ἀπορρέοντος, καὶ λυμαιομένου καὶ διαφθειρόντος. Ἐγὼ δὲ τοῦτον μὲν τὸν λόγον ἀποπέμπομαι. . . .)” (PG 31:380). While he does not place this popular belief in dialogue with contemporary theories of vision, it is crucial to observe that in this case the rays, while emitted by the eyes, are implicitly being sent out toward those people being envied. Given

Metaphorically then, Eros emerges from the union of the rays from the viewer's eyes in the “strenuous activity of contemplation” and the “emanation . . . from the object contemplated.” As such, the comparison of love to vision is completed and comes full circle by the fact that in this union—of rays and lovers—not only is Eros born, but also vision itself.<sup>50</sup> Hence, for this metaphor to work rhetorically, Plotinos must rely on a version of Plato's united-rays theory in which seer and object, lover and the one being loved, could be just as united as their optic effluences are.

Not only does Alexander of Aphrodisias serve as a key source for Plotinos, but Plotinos's theory of visual perception relies precisely on an Aristotelian-infused version of Plato's theory where the sympathy of viewer and object come together to produce vision.<sup>51</sup> In his tractate on sight, Plotinos stresses the efflux of light from the eye and its sympathetic union with outside bodies. Elsewhere, he likewise states not only that the eye is a thing of light (*ὀφθαλμὸς φωτειδής*), but that it throws itself out in search of light (*πρὸς τὸ φῶς βαλὼν*) since colors are a form of light (*χρῶας φῶτα ὄντα*).<sup>52</sup> These accounts demonstrate that Plotinos chose to focus on the activity of the viewer by stressing the extramissive effluxes from the eye, yet still crucially acknowledges the necessity and importance of the light

Basil's exhortation against envy, the eyes of the envious are depicted as foreign and external to the reader. This positions the eyes of the envious as if they themselves were objects in the world, distanced and exterior from the righteous viewer who becomes victim to it. On the evil eye in the church fathers, see M. W. Dickie, “The Fathers of the Church and the Evil Eye,” in *Byzantine Magic*, ed. H. Maguire (Washington, DC, 1995), 9–34. Cf. Nelson, “To Say and to See” (n. 1 above), 155.

50 Such a telling metaphorical use of vision appears as well in Nicholas Kabasilas's fourteenth-century liturgical commentary, where he compares the worshipper's union with Christ to the union of the eye with light for the enabling of vision. See Nicholas Kabasilas, *Explication de la divine liturgie*, 44, ed. S. Salaville, SC 4 bis (Paris, 1967), 252, trans. J. M. Hussey and P. A. McNulty, *Commentary on the Divine Liturgy* (Crestwood, NY, 1960), 100.

51 E. K. Emilsson, *Plotinus on Sense-Perception: A Philosophical Study* (Cambridge, 1988), 36–62. See also G. H. Clark, “Plotinus' Theory of Sensation,” *Philosophical Review* 51 (1942): 357–82. See Plotinos, *Enneads* 4.5, ed. and trans. Armstrong, 4:280–315.

52 “Καὶ ὁ νοῦς λόγος. Διὸ τὸν ἐφ’ ἐκάστου λόγον ὁρῶν τὸ κάτω ὡς ὑπὸ τὸ φῶς σκοτεινὸν ἡγῆται, ὥσπερ ὀφθαλμὸς φωτειδὴς ὢν πρὸς τὸ φῶς βαλὼν καὶ χρῶας φῶτα ὄντα τὰ ὑπὸ τὰ χρώματα σκοτεινὰ καὶ ὕλικά εἶναι λέγει κεκρυμμένα τοῖς χρώμασι.” Plotinos, *Enneads* 2.4.5, ed. and trans. Armstrong, 2:114–15.

that actively radiates from objects. These emanations are the source of vision—a model of sympathetic union derived from Plato.<sup>53</sup> In this model, as in Plato, the sympathy occurs by virtue of a union of like with like, where similitude plays a crucial role. The light from the eyes unites with that of colors, since they are both colors and the eyes' light is a species of light. However, Plotinos's theory of perception was based not on the mere mechanics of physiological sight but rather on a concern with the soul's ability to perceive other beings.<sup>54</sup> While Plotinos argued against a medium for vision in the Aristotelian sense, stressing instead the immediacy of sight, his reasoning against this was precisely because if we considered sight to be due to impressions on an intermediary, which are passed along, then sight would be a matter of touch, "but in acts of seeing there is no touch" (ἐν δὲ τοῖς ὁράμασιν οὐχ ἅφή).<sup>55</sup> He then goes on to use the well-known Aristotelian example (discussed earlier) that if one presses an object to the eye, vision becomes impossible. Hence, we can observe that the motivations for denying the tactility of sight could serve various articulations of mediation and presence offered by the visible object, yet these variants adopted the non-tactility of sight as a basic given. Even in an instance when Plotinos does indeed choose to stress the intimacy of contact between viewer and object in his discourse on sight and thus compares seeing to touch, he makes sure to word this as a similarity or *likeness* to touch (ἀλλ' ἅφή ἔσται ἕοικὸς τὸ ὁρᾶν), not as a declaration of sight being a species, modality, or form of touch, since he has explicitly argued against this already.<sup>56</sup> Hence, Plotinos helps us to understand the conceptual nuance of such metaphors' operations but cautions us not to confuse sight and touch, as if they were interchangeable.

53 On Plotinos's theory of vision, see A. M. Smith, *From Sight to Light: The Passage from Ancient to Modern Optics* (Chicago, 2014), 134–42.

54 Compare this to Porphyry's theory of visual perception, as paraphrased in Nemesios's *De natura hominis*, which claims that sight is neither the product of an optical cone, *eidola*, or some other cause, but instead it is merely the soul itself encountering fellow visible objects. See P. Lautner, "Perception and Self-Knowledge: Interpreting Fr. 264 Smith," *Bulletin of the Institute of Classical Studies* 50 (2007): 77–90.

55 Plotinos, *Enneads* 4.5.2, ed. and trans. Armstrong, 4:288–89.

56 Plotinos, *Enneads* 4.5.4, ed. and trans. Armstrong, 4:294–95.

Returning then to Photios's account, we might consider a similar deployment of these doubled terms to hint at that union and contact that occurs in vision. This space of contact is nevertheless born not from touch but through the noetic and physical union of rays within that in-between space that separates seers, lovers, and their objects of contemplation. Thus, the term ἀπορρόη in the homily seems to follow its uses in other Byzantine texts, where it suggests an exterior entity's emanation of optic rays. This fits Psellos's use of the term to describe the effluences from the object both in his commentary on Aristotle and in his encyclopedia. In the popular late antique commentaries on sense perception, variants of the term appear frequently and with notable consistency. The term, for instance, appears twenty-two times and with sharp technical precision in Theophrastos's *Commentary on the Senses* to describe all forms of emanations that issue from the visible object in the theories of Plato, Demokritos, Empedokles, and others.<sup>57</sup> Notably, while Theophrastos's commentary on perception does not make an appearance in Photios's *Bibliotheca*, several excerpts from other commentaries by Theophrastos are included, suggesting Photios's familiarity with his broader corpus.<sup>58</sup> And, in the commentary by Alexander of Aphrodisias, the term is deployed fifty-four times, repeatedly used to refer to emanations from perceptible objects. At times, Alexander may use it simply to refer to both emanations—from the eyes and perceptibles—in shorthand by omitting the second verb. Yet, Alexander of Aphrodisias avoids using any form or variant of the word ἀπορρόη (in opposition to another term for the emissions from the eye) to describe the rays from the object. There are, however, four anomalous instances.<sup>59</sup> These exceptions are all in a section commenting on Aristotle's refutation of the theory that the eye sees by something that comes out (438a25)—and once more in a later citation back to this earlier section. In these cases, we witness a desire on the part of Alexander to depict the efflux coming

57 Theophrastus, "De sensu et sensibilibus," *Doxographi Graeci*, ed. H. Diels, repr. (Berlin, 1965), 499–527, trans. Stratum, *Theophrastus* (n. 38 above), 65–151. On this commentary, see H. Baltussen, "The Purpose of Theophrastus's 'de Sensibus' Reconsidered," *Apeiron* 31, no. 2 (1998): 167–99.

58 See Photios, *Bibliotheca*, cod. 278, ed. Henry, 8:157–170.

59 Alexander of Aphrodisias, ed. Wendland, 27.20–34.21, anomalies at 30.22, 31.21, 32.14, 58.25, trans. Towey, 37–43.



from the eye into space as a passive player in sight. This is often paired with the preposition *ἀπό* stating the origin of these effluxes, rather than using the common construction with *ἐκ* or *πρός* that emphasize the forceful action of a movement outward into space from the eyes, which these commentators tend to prefer in such circumstances.

The technical terms that invoke the doubling of optical rays lead me to reevaluate Photios's homily as a shorthand account of Plato's united-rays theory (or some close variant), where, in Photios's words, the "outpouring (*προχύσει*) and effluence (*ἀπορροή*) of the optical rays" refers to the outpouring of rays being sent out from the eye *and* the effluence of optical rays emanating from the object being seen. However, if Photios is indeed citing Plato's theory with a proper and nuanced grasp of its function, then it must be shown why Photios goes on to say that these rays "touched (*ἐπαφωμένη*) and encompassed (*περιέπουσα*) the object." Here, Mango has again oversimplified the text in his translation to the point that it has lost the subtle nuances of Photios's thinking. By taking the "surely" or "perhaps" of *δήπου* from the beginning of the sentence and uniting it with the "as if somehow" of *οἷον* *εἰ πως* preceding the comparison to touch, Mango's version, "For surely, having somehow . . . touched and encompassed the object," has turned a metaphor into a statement of mere wonder and amazement at the cryptic functions of sight. The passage is more accurately translated: "For surely, . . . as if somehow touching and encompassing the object seen."

Mango's reading is partly to blame for scholars' seeing within Photios's homily undeniable evidence for haptic vision.<sup>60</sup> This is only exacerbated by his "essence of the thing seen," a translation that suggests an unmediated model of contact where matter itself is seemingly being transmitted through sight, something for which there is no textual grounds in any of the classical, late antique, or Byzantine texts on vision. An "essence" is not being transmitted through sight—a notion that would require something like *φύσις* or

*οὐσία*, not *εἶδος*—but instead it is the *form* proper of the object alone that is transmitted: "form of the thing seen" (*εἶδος τοῦ ὁραθέντος*). The terminology suggests that Photios was indeed subscribing to a properly Platonic notion of sight that stresses the union of rays for the transmission of form. This emphasis on form is stressed elsewhere, when he opens the broader discussion on hearing and sight: "Just as discourse is through hearing, thus through sight form (*μορφή*) is inscribed (*ἐγχαράσσεται*) into the tablets of the soul."<sup>61</sup> While the vivid language of inscription (*ἐγχαράσσεται*) is used to describe the impression made on memory, the language of outward form is nevertheless used to stress a homology between sight and hearing—specifying that the object of transmission and inscription is never essential but rather formal.

This language of impression and tactility is to blame for the wavering modern understandings of Photios's homily, and was likewise a challenge for classical writers as they attempted to diagram the processes of perception that in some way relied on a form of contact between object, viewer, and consciousness. While relying on haptic metaphors just as we do to characterize our "grasp" or "handle" of a concept, Photios (as the others before him) was not suggesting that sight occurred as touch. Instead, Photios is attempting to detail the psychosomatic unfolding of perception, as his evocative litany of questions suggests: "Has the mind seen? Has it grasped? Has it visualized? Then it has effortlessly transmitted the forms to the memory." Here Photios is carefully detailing the manner in which the mind processes and understands visual information: the object must first be seen, the mind must grasp and understand what it is seeing, this must be given a clear visualization in the mind (which seeing makes quite effortless in comparison to hearing), and then this form is deposited into memory for concrete knowledge.

What is perhaps most significant here is that this litany of questions is mirrored by a parallel one that appeared just prior, for the sense of hearing, discussed immediately before this passage, and worth comparing to clarify the procedural and perceptual aspects that Photios is stressing:

60 For other matters of vision in Photios's *Homily* 17 in relation to Mango's translation, see B. Daskas, "Nota sulla Theotókos descritta da Fozio, *Hom.* XVII 2 (p. 167.14–17 Laourdas)," *ACME: Annali della Facoltà di Lettere e Filosofia dell'Università degli Studi di Milano*, 64, no. 2 (2011): 339–51. See also Sergei Mariev, "Echi delle teorie ottiche antiche nelle *Omēlie* di Fozio," *Bulgaria Mediaevalis* 2 (2011): 71–80.

61 "ὥσπερ γὰρ ὁ λόγος ὁ δι' ἀκοῆς, οὕτω δι' ὀψέως ἡ μορφή τοῖς τῆς ψυχῆς ἐγχαράσσεται πίναξιν." Photios, *Homily* 17, ed. Laourdas, 170.

Photios, *Homily* 17.5  
(with translations modified from Mango)

Laourdas ed., 170.30–32	Laourdas ed., 171.3–4
Ἔκλινέ τις τὸ οὖς εἰς διήγημα; εἴλκυσε φανταζομένη τὸ ἀκουσθὲν ἢ διάνοια; νηφούση μελέτη τὸ κριθὲν τῇ μνήμῃ ἐναπέθετο	Εἶδεν ὁ νοῦς, ἀντελάβετο, ἐφαντάσθη, τοὺς τύπους ἀκόπως ἐν τῇ μνήμῃ παρεπέμψατο
Has [a person] inclined their ear to the story? Has their intelligence drawn to itself and imagined the thing heard? Then, judging it with sober attention, they deposit it into the memory.	Has the mind seen? Has it grasped? Has it imagined? Then, effortlessly, it has transmitted the forms to the memory.

Photios has produced a neatly parallel pair of litanies of questions for both sight and hearing that range—in the same order—from initial perception to memorization, walking us through the mental processes of perception. In fact, this process does not at all address the acts of seeing or hearing itself, both of which are passingly cited in the initial Εἶδεν and Ἔκλινέ of the two respective segments. Hence, we can see that ἀντελάβετο agrees with εἴλκυσε, which can be defined as grasping and drawing in to oneself, respectively. This is obscured in Mango’s translation, which for stylistic purposes depicts the process out of order.<sup>62</sup> Hence, we must understand that in the questions on sight, “Has it grasped?” (ἀντελάβετο) is undoubtedly to be read as an act of perception, better translated as “apprehended” or “perceived.” This perceptual reading of ἀντελάβετο as grasping with the mind is a well-established convention, as evidenced by its definition in LSJ, and it is used with various senses, including hearing. Furthermore, this is the only possible reading, given that at this point in the process being depicted here, the optical rays have already sensed—that is, the mind has already seen, as the first question indicates.

Returning to Photios’s enigmatic simile in his detailing of the physiological sensation of the visual object, where he writes, “as if somehow touching

(ἐπαφωμένη) and encompassing (περιέπουσα) the object,” it is now possible to better grasp the nuances of this statement. Rather than seeing Photios’s passage on sight as referring to the act of sensation alone, it must be recognized that this passage is eloquently detailing the entire process of sight from sensation through perception on to memory—a process that is once again summarized in the rhetorical questions that follow. The long sentence that precedes, like the questions, is neatly divided into four different parts: the sensation of the object through the optical rays, the grasping of the object by the mind, the imagining of that form in the intellect, and the transmission of the images to memory.

The clause “as if somehow touching (ἐπαφωμένη) and encompassing (περιέπουσα) the object-seen” neatly parallels the question “Has it perceived? (ἀντελάβετο).” Both rely on a language of grasping to convey the apprehension of the visual form by the mind. This explains why Photios deploys both ἐπαφωμένη and περιέπουσα to describe the process neatly summarized by the deceptively haptic ἀντελάβετο, with its common understanding as apprehension or perception in the context of various sensory processes, as stated earlier. Furthermore, while one could reason that the light touching of surface implied by ἐπαφωμένη could suggest the alleged tactility of the optical rays, περιέπουσα suggests that both these terms require qualification.

The term περιέπουσα denotes a sense of handling or treatment of a thing. This is not a physical form of grasping nor a sense of encompassing, but rather an idea of regarding an object, person, or thing, given that it appears in contemporaneous sources as a sense of ill or favorable treatment. For instance, the patriarch Nikephoros uses it in regards to the “honored and well-regarded” (τιμῶσα καὶ περιέπουσα) teachings of the church.<sup>63</sup> This certainly does not allow for Mango’s rendering of the term as “encompassed,” unless one reads this action in a more conceptual manner.

The same reading is necessary with ἐπαφωμένη, which in this context seems to indicate this broader notion of contact between sensible objects and sensing

62 Photios, *Homily* 17, trans. Mango, 294, ed. Laourdas, 170.

63 “ἐπειδὴ δὲ ἐκ τῆς καθολικῆς ἐκκλησίας ἐξοστρακίζειν ὀρίζονται, ὁμολογοῦσιν καὶ ἄκοντες ὡς πᾶσα ἡ καθολικὴ καὶ ἀποστολικὴ ἐκκλησία ταῦτα δέδεκται, τιμῶσα καὶ περιέπουσα.” Nikephoros, *Refutatio et eversio definitionis synodalis anni 815*, ed. J. Featherstone, CCSG 33 (Turnhout, 1997), 68.24–28.

beings. This term is evidence in a perceptual context in Porphyry's *Commentary on Ptolemy's Harmonics*, a text that closely resembles the works of Alexander of Aphrodisias and Galen, and which for us here offers more than mere lexical clarity.<sup>64</sup> The exact same construction of the word (ἐπαφωμένη) is used to characterize the process of perception, where Porphyry writes:

For when matter has been informed by the aforementioned rational principle, it happens that the soul focuses upon entities, and again draws off, as it were, the forms from matter; it receives them into itself and in some fashion restitutes them so that the act of discrimination may be non-material. For in the first place apprehension (ἀντίληψις) arising from sense-perception seems to contact (ἐπαφωμένη) the entity and to take up the forms to make a kind of report on them and introduce them into the soul like some guide or introducer. Next, belief-making assumption receives what has been introduced, names it, and describes it through words in the soul as if upon some writing tablet existing in it. Next, the third faculty is one that makes images out of distinctive features and is really a faculty of painting or sculpture or the *phantasia* (φαντασία). It is not content with the form produced by naming and describing, but just as those who try to descry persons sailing into port, or by way of those who attend to features to match them, and work out details of similarities, so this faculty works out the whole structural outlook of the object, and when it achieves accuracy in this way, then it stores the form in the soul. This is the mental image. And when it has arisen within and received confirmation, the condition of knowledge comes about. From this, like a light kindled from leaping fire intellect shines forth, just like an accurate vision for a focus on true being.<sup>65</sup>

This is a general account of sensation and perception, not focused on any particular sense, yet it stresses this notion of the contact that occurs between subject and object when perceptual form is drawn out from matter. As with Photios, it would seem that this process of perceptual decoding and encoding is common for all sensible objects, yet of crucial importance here is the constructs of the imagination (φαντασίας) as the third step in the process. As Peter Lautner details in his study on Porphyry's perceptual processes, Porphyry understands perception as having four stages or faculties involved.<sup>66</sup> Comparatively, we can see that Porphyry's stages neatly line up with Photios's own fourfold perception: sensual perception through contact, the assumption and reception of the sensation introduced, the creation of images through the imagination, and the eventual "condition of knowledge" (ἡ τῆς ἐπιστήμης . . . διάθεσις), presumably—just as the "unfailing knowledge" (ἐπιστήμης ἀπλανεστάτης) in Photios—for the depositing of this image into the memory or the soul for future emulation.

Therefore, as Porphyry uses ἐπαφωμένη to describe this initial contact of sensation, Photios similarly uses it to reflect these initial stages where the visible thing is received into the mind, depicting its consideration and handling by the mental faculties

ὕλης τὰ εἶδη καὶ δεχομένην εἰς ἑαυτὴν καὶ τρόπον τινὰ ἀποκαθιστᾶσαν εἰς τὸ αὐλὸν γίνεσθαι τὴν κρίσιν. τὸ μὲν γὰρ πρῶτον ἀπὸ τῆς αἰσθήσεως ἢ ἀντίληψις, οἷον ἐπαφωμένη τοῦ ὄντος ἀναλαμβάνειν αὐτὰ πειράται καὶ οἷον εἰσαγγέλλειν τε καὶ εἰσάγειν εἰς τὴν ψυχὴν ὥσπερ ὁδηγός τις καὶ εἰσαγωγεύς. μετὰ δὲ ταῦτα ἡ δοξαστική ὑπόληψις ὑποδέχεται τὸ εἰσαχθὲν προσαγορεύουσα αὐτὸ καὶ ἀναγράφουσα διὰ λόγου τῇ ψυχῇ, οἷον εἰς τι γραμμάτιον ἐνυπάρχον αὐτῇ. τρίτη δ' ἐστὶ μετὰ ταῦτα δύναμις εἰκονιστὴ τῶν ιδιωμάτων καὶ ὄντως ζωγραφικὴ τις ἢ πλαστικὴ ἢ φαντασία οὐκ ἀρκουμένη τῷ τῆς προσαγορεύσεως εἶδει καὶ τῷ τῆς ἀναγραφῆς, ἀλλ' ὅνπερ τρόπον οἱ τοὺς καταπλέοντας εἰκονίζοντες ἢ κατὰ τοὺς τοῖς συμβόλοις παρακολουθοῦντας τὴν ἀκρίβειαν τῆς ὁμοιότητος ἐκλογίζονται. οὕτω καὶ αὕτη τοῦ πράγματος ἅπασαν τὴν μορφήν ἐκλογιζομένη, ὁπόταν τοῦτον τὸν τρόπον ἀκριβῶς, τότε ἀπέθετο ἐν τῇ ψυχῇ τὸ εἶδος. καὶ τοῦτο ἦν ἡ ἔννοια, ἥς ἐγγενομένης τε καὶ βεβαιωθείσης ἡ τῆς ἐπιστήμης ἐγγίνεται διάθεσις, ἀφ' ἧς ὥσπερ ἀπὸ πυρὸς πηδήσαντος ἐξαφθὲν φῶς ὁ νοῦς ἀναφαίνεται οἷον περ ὄψις ἀκριβὴς εἰς τὴν προσβολὴν τὴν ἐπὶ τὸ ὄντως ὄν." Porphyry, *Eis ta armonika Ptolemaiou hypomnema*, ed. I. Düring, *Kommentar zur Harmonielehre des Ptolemaios* (Göteborg, 1932), 13–14, trans. P. Lautner, "Mental Images in Porphyry's Commentary on Ptolemy's Harmonics," *Apeiron* 48, no. 2 (2015): 220–50, esp. 225–26.

<sup>66</sup> Lautner, "Mental Images," esp. 226–31. See also M. Chase, "Porphyry on the Cognitive Process," *Ancient Philosophy* 30 (2010): 383–405.

<sup>64</sup> On the relations between Porphyry, Alexander of Aphrodisias, and Galen see R. Chiaradonna, "Platonismo e teoria della conoscenza stoica tra II e III secolo D.C.," in *Platonic Stoicism—Stoic Platonism: A Dialogue Between Platonism and Stoicism in Antiquity*, ed. M. Bonazzi and C. Helmig (Leuven, 2007), 209–41, esp. 228–34.

<sup>65</sup> "τῆς γὰρ ὕλης εἰδοπεποιημένης ὑπὸ τοῦ ῥηθέντος λόγου τὴν ψυχὴν συμβέβηκε τοῖς οὖσιν ἐφισταμένην καὶ οἷον ἀποσπῶσαν αὐθις ἀπὸ τῆς

as is suggested by the paired *περιέπουσα*. Thus, for the sake of clarity, we might revise “as if somehow touching (*ἐπαφωμένη*) and encompassing (*περιέπουσα*) the object-seen,” by stating instead, “as if somehow contacting (*ἐπαφωμένη*) and regarding (*περιέπουσα*) the visible thing.” This stresses these stages in sense perception whereby the form of the thing being seen is apprehended, grasped by the mind, and understood, before it can come to generate mental images for its storing in memory. Photios’s sense of wonder, conveyed through the *οἶονεί πως*, is then to be understood more as an indication of the abstracted and difficult understanding of sensual contact that occurs in this perceptual process, rather than a mere marveling on the tactility or physiology of sight. *οἶονεί πως* indicates precisely the obscurity of how the mind initially grapples with sensual data in a stage where the rays have allowed for sight, but immediately before the imagination has capably produced an image of the forms for their inscription in memory. The phrase captures the importance of perception’s temporal progression and unfolding. When Photios details this act of establishing contact and grappling with the object, he describes the visible thing as *τὸ ὁρατὸν*. Yet, subsequently, when he speaks of the transmission and implicit visualization of the form of the object, he describes this entity with an aorist passive participle—that is to say, as “the form of the thing-that-has-been-seen” (*τὸ εἶδος τοῦ ὁραθέντος*). Although it is a useful temporal marker that aptly and succinctly communicates the procedurality of the perceptual processes, this aorist passive participle also stresses the fact that the images that come into consciousness are not physical realities, but rather mere forms of what has been already perceived.

Thus, we may then responsibly revise Mango’s translation of Photios’s crucial passage on sight as follows:

For surely, [sight], through the outpouring [i.e., from the eye] and emanation [i.e. from the object] of the optical rays, as if somehow contacting and regarding the form of the visible object, sends it to the intellect, letting it be conveyed from there to the memory for the concentration of unfailing knowledge. Has the mind seen? Has it apprehended? Has it imagined? Then, it has effortlessly transmitted the images to the memory.

With this revision, it becomes clear that the implications of a tactile sight are less consequential. For even if visual sensation (up to the second stage) were indeed seen as operating on a model of tactility, at the second stage of perception this tactile contact with the object would be curtailed. The physical touch of the image at this point would be remediated in any case through the cognitive faculties that produce mental images for their impression on the “tablets of the soul” (*τοῖς τῆς ψυχῆς ἐγγράσσεται πίναξιν*), as Photios said earlier. What is effortlessly deposited into the memory by sight are the typologies (*τοὺς τύπους*) of images, which then serve as the model for emulation and reproduction. This is in accordance with the typological language associated with the relations between the Old and New Testaments as well as the representation of forms in icons, whereby representations—both verbal and visual—are always caught in typological chains that can be ever replicated and reproduced, while always signaling back to their archetypes and prototypes.<sup>67</sup> Hence, vision would always be mediated and never haptic because the mind does not merely impress material or haptic forms directly taken from the object onto itself, but rather reconstitutes sensual information into mental images that are then deposited in the soul/memory.

In the context of *Homily* 17, the passage is part of Photios’s defense of images, accusing those who are against images to be likewise arguing against the teachings passed on by the Gospels, a common defense of the iconophiles. As the beginning of the section describes:

Christ came to us in the flesh, and was borne in the arms of His Mother. This is seen and confirmed and proclaimed in pictures, the teaching made manifest by means of personal eyewitness, and impelling the spectators to unhesitating assent. Does a man hate the teaching by means of pictures? Then how could he not have previously rejected and hated the message of the Gospels? Just as speech is transmitted by hearing, so a form through sight is imprinted upon the tablets of the soul, giving to those whose apprehension (*πρόληψις*) is not soiled by

67 See F. Young, “Typology,” in *Crossing the Boundaries: Essays in Biblical Interpretation in Honour of Michael D. Goulder*, ed. S. E. Porter, P. Joyce, and D. E. Orton (Leiden, 1994), 29–48, esp. 34–39.



wicked doctrines a representation of knowledge concordant with piety.<sup>68</sup>

Hence, the overall section is a defense of images through a comparison between the comprehension emerging from hearing and sight. Here, Photios uses the language of grasping, which we observed in Symeon Seth as well, to describe cognition. In this section of the homily, the use of *πρόληψις*, *κατάληψις*, *ἀντελάβετο*, and even *εἴλκυσε* to describe acts of comprehension in regards to both sight and sound demonstrates the importance of these terms to a language of cognition, a set of terminology that is strikingly similar to our own. Thus, these degrees of grasping, illustrated by the various prefixes added to *-ληψις* and *-λαμβάνειν*, must be understood as characterizing different forms of intellectual approach toward sensory data in the process of perception. These lessons demonstrate that Photios's passage on vision is much richer, more nuanced, and more technically articulate than previously believed. It offers us an insight not only into the process of visual sensation but also into the compound processes of cognition and perception that are inseparable from sight or hearing alone, as well as memory—the latter being an issue that requires further investigation.<sup>69</sup>

## Conclusion

It may be resolved then that the pairing of tactility and sight in the philosophical, medical, and theological sources speaks not to a haptic iterant of visual perception, but rather to the cognitive processes of perception that are used as metaphors in order to understand how the mind is able to remediate sensual information into noetic forms. To suggest then that sight is a species of touch would be to overlook the intricate complexities

of Byzantine perceptual theory and its relationship to thought, cognition, memory, and action. In my close reading of these classic texts on vision here, my goal has not been to produce a new normative theory of sight for Byzantium—or to survey every Byzantine account of sight—but rather to show that the one element that all these theories did have in common was an avowed separation of touch and sight, where tactility was used strictly to characterize the ineffable experience of contact between a viewer and a visible body.

The elite nature of highly learned Byzantine or late antique figures, like Michael Psellos or Alexander of Aphrodisias, discussed earlier, may lead us to question their applicability for a broader Byzantine sphere. And, furthermore, the focus of these commentaries on Aristotle challenges the all-too-frequent characterization of the Byzantine and medieval world at large as being neo-Platonic. So it is important to step back and reflect on the medieval Greek history of optics briefly. As A. Mark Smith's recent survey of medieval optics demonstrates, it was precisely the late antique commentators on Aristotle that were treated by the western and eastern medieval worlds as a foundation for the development of optics.<sup>70</sup> Aristotle's summaries and evaluations of earlier writers, including Plato, led Aristotle to be seen less as a polemicist and more as an explicator, thus often serving as a prerequisite for a proper and disciplined understanding of Plato. This intellectual foundation led ostensibly to a desire to coax and coerce a synthesis of proper Aristotelian and Platonic theories of vision as I have demonstrated here. Plotinos, Alexander of Aphrodisias, Iamblichos, Themistios, Simplicios, and John Philoponos developed their theories on vision by writing commentaries on Aristotle that attempted to resolve the discrepancies among earlier thinkers and commentators. These writers provide us theories of vision that saw sight as a union of effluxes from eye and object, even if these effluxes and their orders of mediation varied from source to source. For instance, Philoponos was an intromissionist in the Aristotelian sense, where light actualizes the transparency of an intervening substance like air or water, but he saw light as immediate rather mediate, and he was all the while emphatic that the eye does not emit visual rays.<sup>71</sup> While these commentaries agree in the division

68 “Χριστὸς σαρκὶ ἐπεδήμησε καὶ τῆς τεκούσης ὠλέναις ἐφέρετο· τοῦτο καὶ ταῖς εἰκόσιν ὁράται καὶ πιστοῦται καὶ κηρύσσεται, αὐτοψίας νόμῳ διατρανουμένης τῆς μαθήσεως καὶ τοὺς θεατὰς ἐφέλκομένης εἰς ἀπροφάσιστον συγκατάθεσιν. Μισεῖ τις τὴν διὰ τούτων διδασκαλίαν; πῶς οὐ πρότερον οὗτος τὸ τῶν εὐαγγελίων εἰς μῖσος ἀπώσατο κήρυγμα; ὥσπερ γὰρ ὁ λόγος ὁ δι’ ἀκοῆς, οὕτω δι’ ὀψεως ἡ μορφή τοῖς τῆς ψυχῆς ἐγγαράσσεται πίναν, ὁμόφωνον τῆς εὐσεβείας, οἷς πονηρῶν δογμάτων ἢ πρόληψις οὐκ ἐνέστικται, τὴν μάθησιν διαγράφουσα.” Photios, *Homily* 17, ed. Laourdas, 170–71, trans. Mango, 293–94.

69 On memory in Byzantium, see N. P. Sullo, “The Art of Memory in Byzantium during the Later Middle Ages” (PhD diss., Yale University, forthcoming).

70 Smith, *From Sight to Light* (n. 53 above), 134–42.

71 Ibid., 143–50.

of the senses, stressing often the fallacy of atomic or some earlier extramissive theories as conflating sight with touch, they nevertheless each prioritize different elements in the process to suit their own intellectual needs. Thus, sight ends up being less dependent on how Byzantines thought they saw, than as to how it suited them best to see.

Therefore, it is necessary to see the Euclidian interests of George Pachymeres' *Quadriuvium* and Symeon Seth's *Conspectus rerum naturalium* as learned curiosities given that despite Ptolemy's coherence and aptitude, his work had little discernable effect on visual theory in the late antique and Byzantine period, as Smith convincingly demonstrates. The text fails to survive in Greek, coming down to us only in a Sicilian translation into Latin from Arabic, and there is only one late antique commentary—Damianos (or Heliodoros) of Larissa's *The Optical Hypotheses*—that mentions Ptolemy's *Optics*. The text was strikingly rare in the Greek-speaking sphere. Further, when it does appear, it is in service to an abstracted theory of visual rays for the sake of mathematical calculations of reflection and refraction, as evidenced in Symeon Seth's description of Ptolemy's "floating coin" experiment. Thus, we should understand—at least tentatively—that in the Byzantine context thinking on visual perception was divided into two overall camps. First, the Platonic-Aristotelian theories of sensation and perception that detailed the workings of the eye and its acquisition and processing of visual data; and, second, the mathematical treatises aimed at the geometric calculations of optics. The former served its power in the physiological and psychological understanding of perception and the workings of the eyes, whereas the latter offered only limited insights on the former's concerns, given that its focus was often on mathematics rather than perception itself. Rather than disregarding any of these figures as intellectual outliers, ostracized by their learnedness and worldliness, it is best to comprehend them as indexes of the rich proliferation of theoretical texts on vision available to the Byzantine scholar and educated public.

Consider, for example, that while Photios may have emphasized extramission in his *Homily* 17, in his *Homily* 10 on the inauguration of the Pharos Chapel he draws from a competing theory to describe the intricacy of the decoration: "Democritus would have said, I think, on seeing the minute work of the pavement

and taking it as a piece of evidence, that his atoms were close to being discovered here actually impinging on the sight."<sup>72</sup> Here Photios suggests that the effects of intromission *could be said* to be occurring as he viewed the fine work of the pavement, as if the atoms of intromissive sight were "falling upon the eyes" (ὕπ' ὄψιν πιπτούσας). While he does not necessarily subscribe to this theory of vision, suggested by the hypothetical tone of the sentence, Photios exhibits familiarity with what was an elementary knowledge of vision, among many, in the Byzantine world. Such engagement with alternative views on sight is found centuries later in Nicholas Mesarites (d. 1214), who recounts a debate held by physicians' students in the courtyard outside the Church of Holy Apostles, as to "whether our power of sight directs itself outward or whether images are received by us" (εἰ κατ' ἐκπομπὴν ὁρώμεν ἢ εἰσπομπήν).<sup>73</sup> In the late eleventh century, Nicholas and Theodore of Andida in the *Protheoria* play with ideas of intromission when they describe a viewer looking down on a city, gazing upon "the radiance and splendor of the rays being sent out from that place (ἐκπεμπομένων ἀκτίνων), but not the nature (φύσιν) itself of the good things stored there below."<sup>74</sup> Such passing comments not only speak to a long-standing popular familiarity with intromissive and atomic theory but also index the preservation of the teachings of Demokritos, Epicurus, and Leukippos as discussed by commentators such as Theophrastos, Aëtius, and Alexander of Aphrodisias.<sup>75</sup>

The close reading of the literature suggests that the theory of the optical pneuma appears to have been favored by medical practitioners in the Byzantine

72 "Δημόκριτος εἶπεν ἂν, οἶμαι, τὴν τοῦ ἐδάφους λεπτοουργίαν ἐνιδῶν καὶ ταύτῃ τεκμηρίῳ χρώμενος, μὴ ἂν πόρρω εἶναι τοῦ μὴ οὐχὶ καὶ τὰς ἀτόμους αὐτοῦ καὶ ὑπ' ὄψιν πιπτούσας ἀνευρήσθαι." Photios, *Homily* 10, 2:433.9–434.2, ed. Laourdas, 102, trans. Mango, 187.

73 Nicholas Mesarites, 42.5, ed and trans. G. Downey, "Nikolaos Mesarites: Description of the Church of Holy Apostles," *TAPS* 47, no. 6 (1957): 857–924, esp. 895, 917.

74 "κατιδεῖν τὴν ἐκεῖθεν ἐκπεμπομένων ἀκτίνων αἴγλην τε καὶ λαμπρότητα: οὐ μὴ αὐτὴν τὴν φύσιν τῶν ἐνδον ἀποκειμένων ἀγαθῶν." Nicholas and Theodore of Andida, *Protheoria* (PG 140:468B–C).

75 See also Nikephoros Gregoras, *Byzantina Historia*, CSHB (Bonn, 1830), 2:790, a memorable statement that, following the coronation of Emperor John VI Kantakouzenos in 1347, one would find nothing left in the imperial treasury, "but air and dust and, as they say, the atoms of Epicurus." For a discussion of this text, and the translation of this phrase, see C. Hillisdale, *Byzantine Art and Diplomacy in an Age of Decline* (Cambridge, 2014), 1.

world, yet could be harmoniously compared to Platonic and Aristotelian theories of vision, which likewise relied on a theorization of an in-between space or medium as the site of vision. While it is possible to infer or deduce theories of vision from the techniques and practices of artists and writers, each of these should be treated as independent cases and interpreted with great nuance and care for the language and sources of their theories. Crucially, it becomes necessary to understand that sensation is not neatly separate from perception in our sources. Thus any evidence must be appraised with a careful understanding of the technical language and linguistic conventions of optical treatises, as well as

with a consideration of the metaphors used to characterize the mental, cognitive, and memory practices of the Byzantine viewer.<sup>76</sup>

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76 For more on these matters in practices of veneration, see R. Betancourt, "Tempted to Touch: Tactility, Ritual, and Mediation in Byzantine Visuality," *Speculum* 91, no. 3 (2016): 660–89.

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